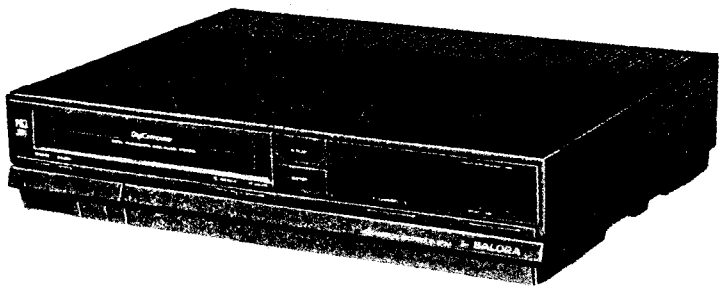
SERVICE-MANUAL

VIDEO TAPE RECORDER SV8720 HS-349



VHS Only cassettes marked VHS can be used with this video cassette recorder.

SPECIFICATIONS

Tape Format	:	VHS 1/2" high-density video cassette tape
Power Source	:	220V AC; 50Hz
Power Consumption	:	Approx. 23W
Television System	:	PAL colour and CCIR monochrom signal (System B & G) 625 lines, 50 fields
Video Recording System	:	4 rotary heads, azimuth helical scanning system
Luminance	:	Frequency modulation recording
Colour Signal	:	Low frequency conversion sub-carrier phase shift recording
Audio Track	:	1 track
Tape Speed	:	23.39 mm/sec (Standard Play) : 11.7 mm/sec (Long Play)
Record/Playback Time	:	240 min. with E-240 cassette (Standard Play Mode) : 480 min with E-240 cassette (Long Play Mode)
Heads: Video	:	4 rotary single crystal heads
Audio/ Control	:	1 stationary head
Erase	:	1 full track head
Video Input	:	0.75 to 1.5 Vp-p, 75 ohm unbalanced Scart socket
Audio Input: Line	:	−8 dBs, 50K ohm unbalanced Scart socket
Video Output	:	1.0Vp-p, 75 ohm unbalanced Scart socket
Audio Output	:	−8 dBs, 1K ohm unbalanced Scart socket
TV Tuner	:	VHF 2 ~ 12 CH UHF 21 ~ 69 CH CATVS1' ~ S3', S1 — S20
Operating Temperature	:	5°C to 40°C
RF Channel Output	:	Set to Channel 36 Channel 32 — Channel 40 Selectable
Weight	:	Approx. 5.8 kg
Dimensions	:	424 mm (W) × 92 mm (H) × 310 mm (D)
Timer	:	7 programs for any channels in two weeks/every day 1 program for any channels in every week day 24 hour digital synchronized with crystal oscillator frequency.
Channel Selection	:	30 position UP/DOWN (Voltage synthesizer selector)

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DISASSEMBLY

1. REMOVAL OF TOP COVER

A. As shown in Figure 1, remove the four screws (Ⓐ, Ⓑ, Ⓒ and Ⓓ), two on each side, retaining the top cover.

B. Gently expand the bottom edges of the top cover, pivot cover forward, then slide toward rear, in the direction of the arrows.

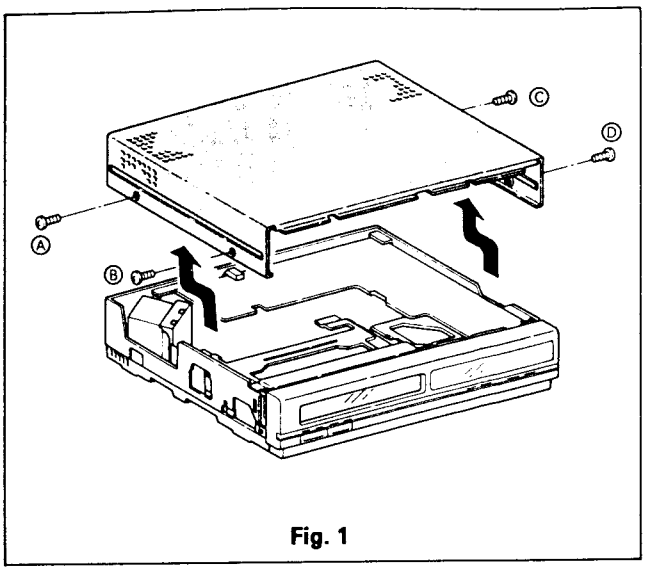


Fig. 1

2. REMOVAL OF FRONT PANEL

A. Remove screw at Ⓐ.

B. Unfasten the seven snaps (Ⓑ, Ⓒ, Ⓓ, Ⓔ, Ⓕ, Ⓖ and Ⓗ) and remove the front panel in the direction shown by the arrows.

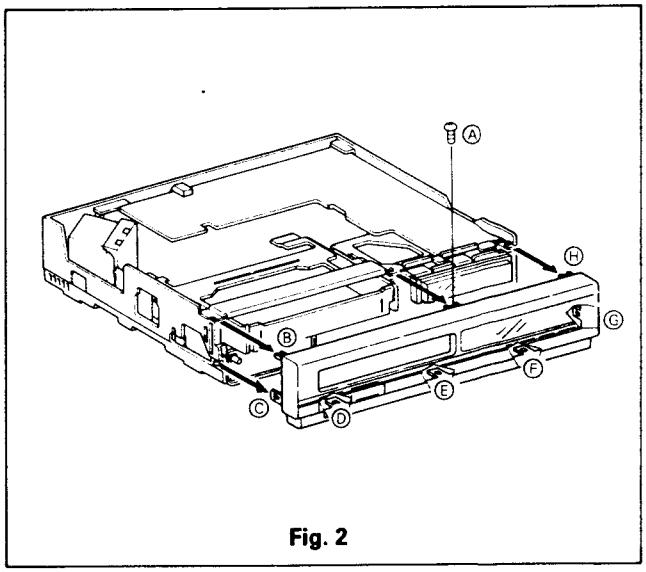


Fig. 2

3. REMOVAL OF BOTTOM COVER

A. Remove the seven screws (Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ, Ⓕ, and Ⓖ) retaining the bottom cover as shown in Fig. 3.

B. Remove the bottom cover by sliding toward the rear side and pulling outward in the direction of the arrow.

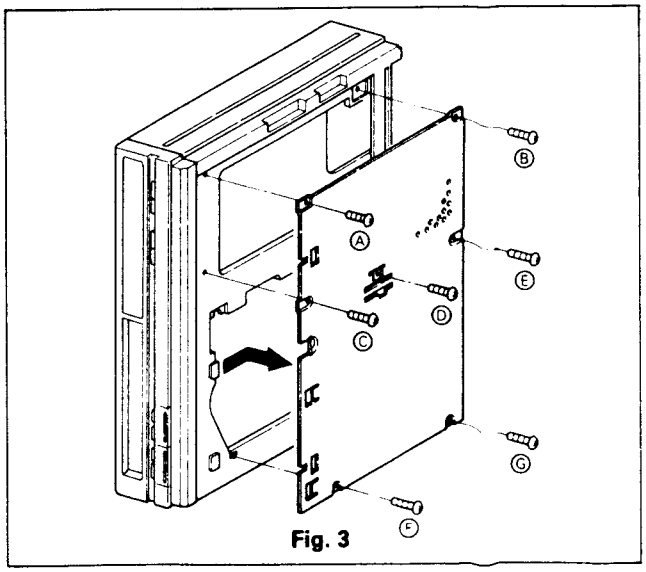


Fig. 3

HOW TO EXECUTE CIRCUIT BOARD SERVICE

CAUTION: BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB UNPLUG THE POWER CORD FROM THE A.C SOURCE

Location of Printed Circuit Boards (Refer to Fig. 4)

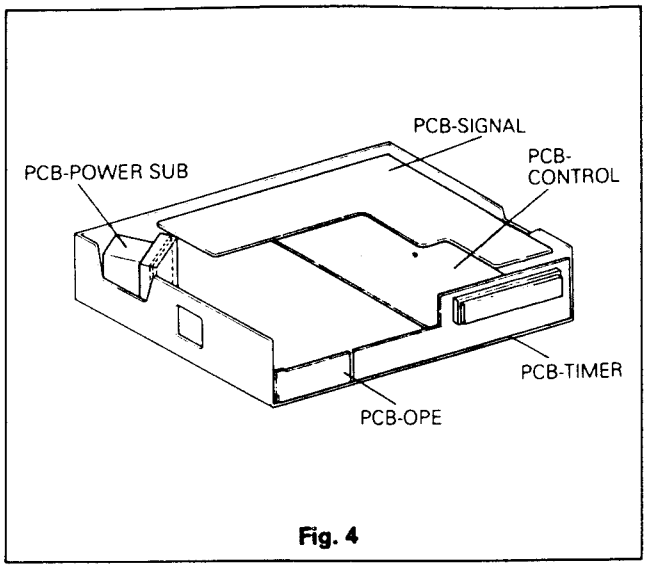


Fig. 4

1. PCB SIGNAL

A. Remove 4 retaining screws on the top side (Ⓐ, Ⓑ, Ⓒ and Ⓓ) and 2 retaining screws (Ⓔ and Ⓕ) on the rear side of the signal circuit board, which is shown in Fig. 5.

B. Open the circuit board in the arrow marked direction, letting the right side hook hang on the base chassis.

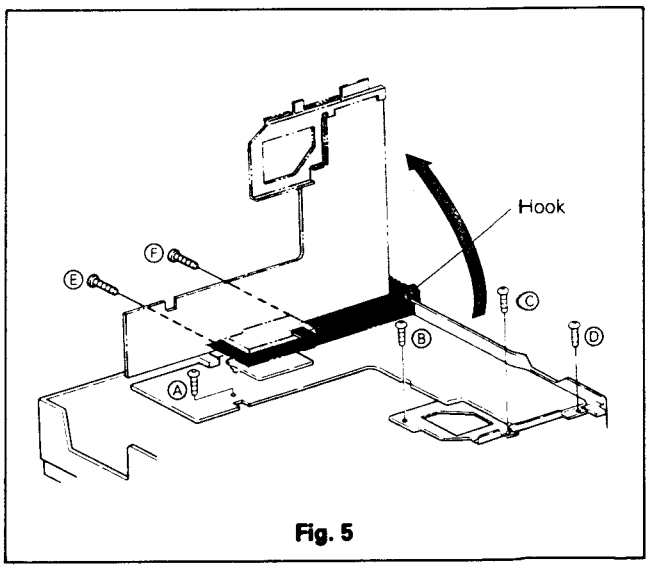


Fig. 5

2. PCB CONTROL/POWER

A. Remove the signal circuit board which is given in Item (1).

B. Remove the bottom cover, (Refer to Item (3) on page 1).
In general, under the circumstances, the service of the control circuit board will be available.

C. Removing two retaining screws (Ⓐ and Ⓑ) which are shown in Fig. 6, raise up and remove the circuit board.

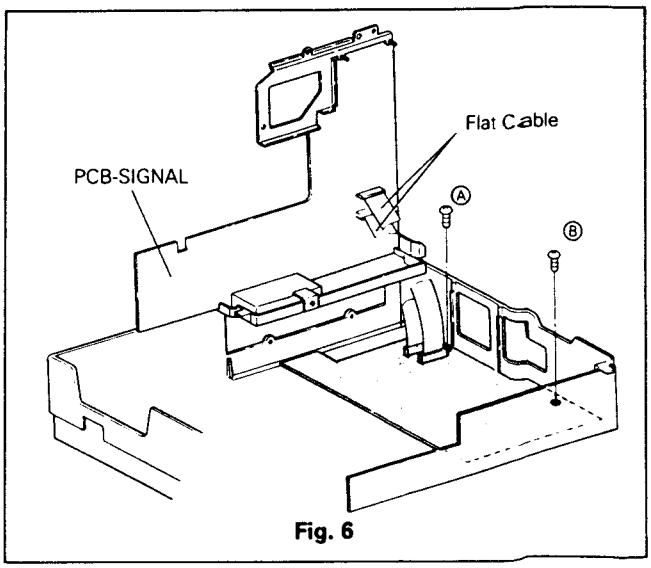


Fig. 6

3. PCB OPE

A. Unlock the PCB Ope Supporter Ⓐ, as shown in Fig. 7.
B. Remove the PCB Ope.

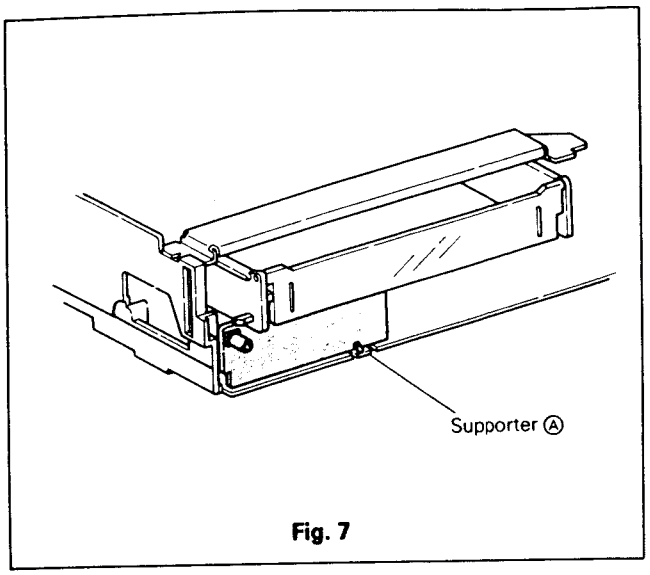


Fig. 7

4. PCB TIMER

A. Unlock the two PCB Timer Supporters (Ⓐ and Ⓑ) as shown in Fig. 8.
B. Remove the PCB Timer.

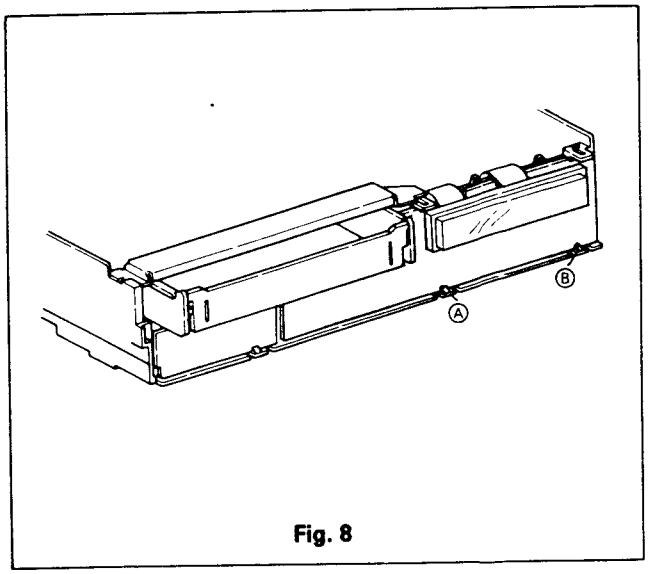


Fig. 8

5. PCB Power SUB

A. Remove the three screws (Ⓐ, Ⓑ and Ⓒ) retaining the PCB power sub as shown in Fig. 9.
B. Remove the screw Ⓓ retaining the Cover Power as shown in Fig. 9.

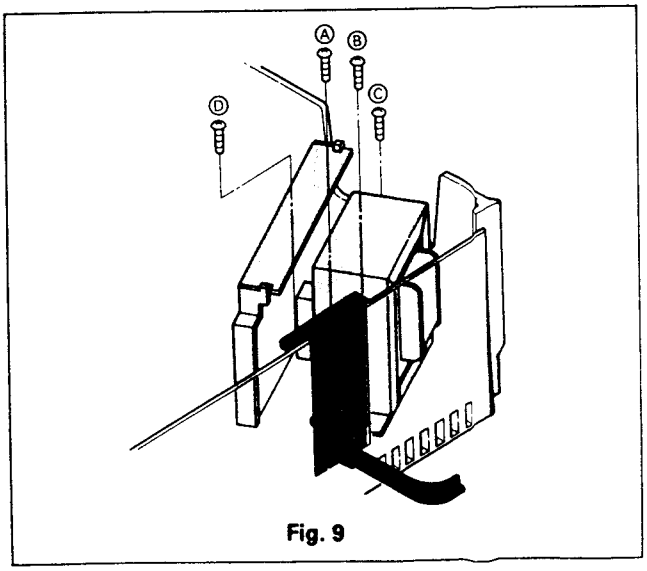


Fig. 9

CLEANING

The following items require cleaning after servicing to maintain satisfactory performance.

1. VIDEO HEAD CLEANING

A. Remove the top cover. (Refer to item 1 on page 1)
B. Remove the Stay-Stopper-C. (Refer to item 2-1-1 C on page 7)
C. Moisten a clean piece of chamois with a professional head cleaning solution. Hold the chamois to the drum assembly and rotate the drum clockwise by hand to clean the video heads and tape path.

NOTE:
Never move the chamois vertically while cleaning, otherwise the heads will be damaged.
After the heads are cleaned, allow the cleaned portion to dry thoroughly before running a tape, otherwise the tape and head may be damaged.

2. TRANSPORT SYSTEM

(The transport mechanism should be cleaned after every 500 hours of use to maintain proper operation.)

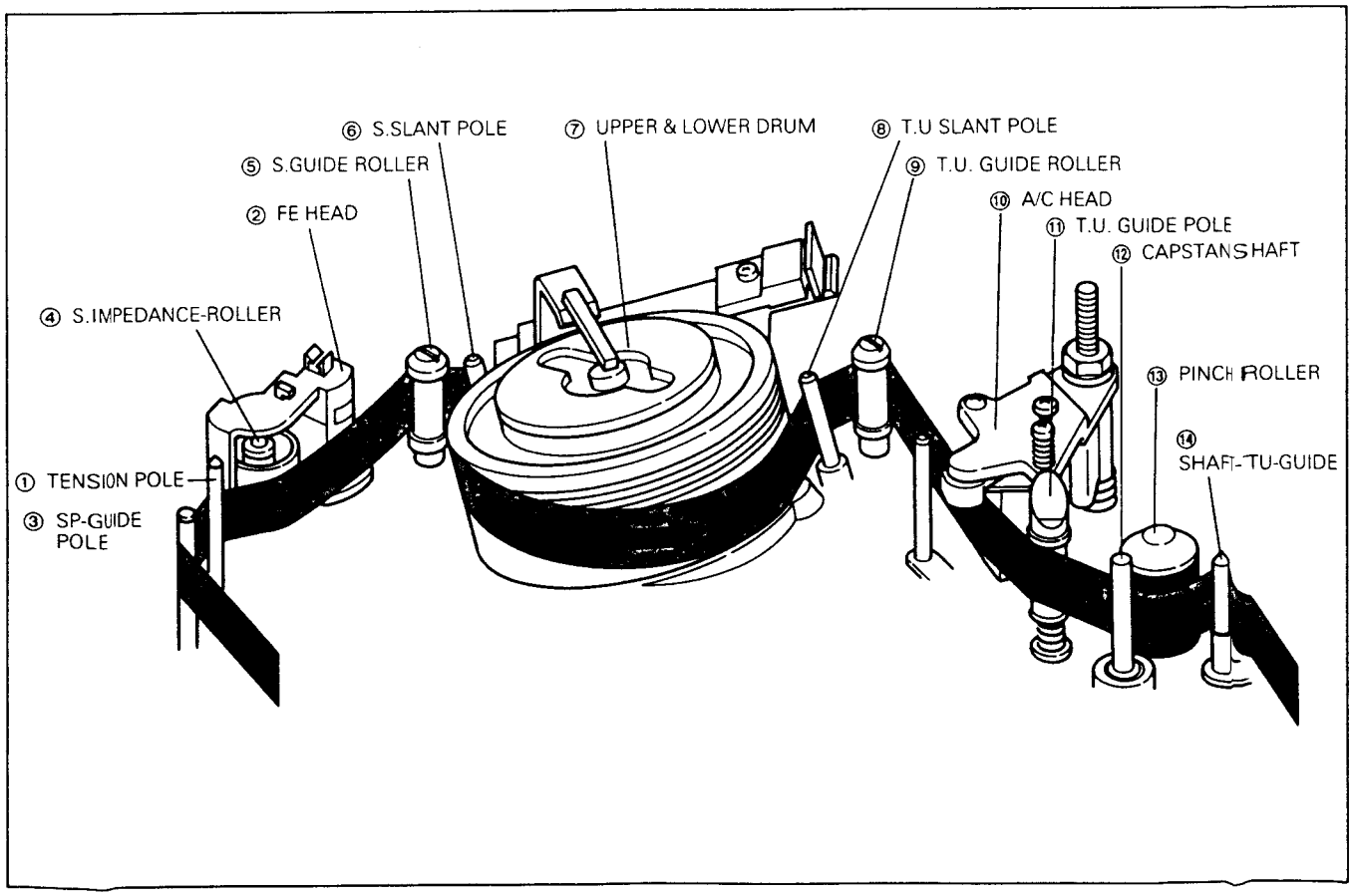
A. The following components of the transport system require occasional cleaning:

① TENSION POLE	② FE HEAD
③ SP-GUIDE POLE	④ S.IMPEDANCE-ROLLER
⑤ S.GUIDE ROLLER	⑥ S.SLANT POLE
⑦ UPPER & LOWER DRUM	⑧ T.U SLANT POLE
⑨ T.U. GUIDE ROLLER	⑩ A/C HEAD
⑪ T.U. GUIDE POLE	⑫ CAPSTAN SHAFT
⑬ PINCH ROLLER	⑭ SHAFT-TU-GUIDE

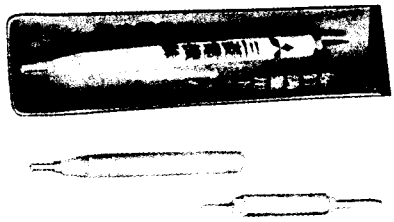
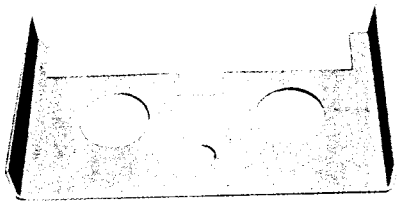
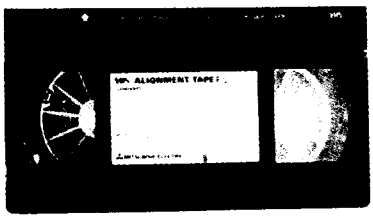
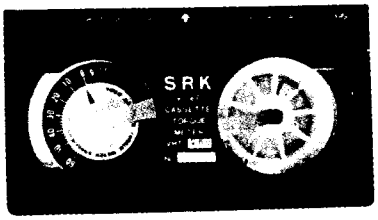
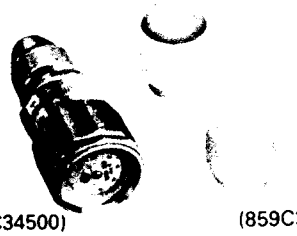
B. To clean, use a small piece of gauze moistened with alcohol.
C. Use extreme care when cleaning the video heads and Drum assembly to prevent damage. Avoid touching the Drum assembly with your fingers which would deposit skin oil on it. NEVER clean the Drum assembly by moving the cleaning pad vertically.
D. After cleaning transport mechanism, allow it to dry thoroughly before loading a tape. If this is not done damage to the heads or tape may result.

3. REEL DRIVE SYSTEM

A. Reel Disc Brake Surfaces require occasional cleaning using a small piece of gauze moistened with alcohol.



MECHANICAL & ELECTRICAL ADJUSTMENT TOOLS

	PURPOSE	METHOD
Adjustment Driver (859C25900) 	The adjustment driver is intended to adjust variable resistors, trimmers, transformers etc. in the circuitry.	Select a tip suitable for the particular head of the component concerned and adjust.
Dummy Cassette (859C34702) 	The dummy cover is loaded instead of the cassette tape in repair, inspection, adjustment and soak-testing. The dummy cover masks the start and end sensors and turns the cassette switch on.	Load the dummy cover in the cassette housing instead of the cassette tape.
Hex Keys (1.5mm) (859C25902) (859C25905)	The hex keys are used for tightening or removing hexagonal socket head screws which fasten the guide rollers of the supply and take-up.	Insert the given size (1.5mm) hexagonal socket and turn.
Alignment Tape (MH-2 PAL) (859C33901) 	Standard signals (VHS Standard) are recorded on the alignment tape and reproduced when required in the adjustment of Y/C circuit, audio circuit and interchangeability alignment.	Install and run in the play mode, the same as for ordinary tape.
Back Tension Gauge (859C34508) 	The back tension gauge is used for measuring the tension of the tape on the supply side.	Load this gauge in the cassette housing and run in the play mode. Read the gauge indicator.
Torque Meter (Torque Meter Head)  (859C34500) (859C34501)	The torque meter is used for measuring the torque of the reel disc brake, "FF" and "REW", Take-up etc.	Measure the brake torque by setting the meter on the reel disc. Measure the "FF" and "REW" take-up torque by rotating the meter at the same speed by hand and reading the scale indicator.

	PURPOSE	METHOD
Master Plan Jig (859C34107)	The height gauge and the master plane are used for measuring height and perpendicularity of the heads, rollers, reel discs, etc. of the tape path.	The master plane is set on the main deck and the height gauge is applied to the part being measured.
Grip ring fixer (859C34705)	A tool for preventing the grip ring from opening excessively.	While opening the grip ring with the tips of this tool, install the grip ring on to the shaft.
REC Current Adjustment Jig (859C34706)	The REC Current Adjustment Jig is use for FM record level adjustment and Recording colour level adjustment.	Use in conjunction with oscilloscope. For deteil refer to the service manual.

MAJOR COMPONENT REMOVAL AND INSTALLATION

1-1 PICTURE CONTROL ADJUSTMENT

VCR picture quality may be adjusted according to personal preference:
Rotate the picture control knob, located as shown in Fig. 1, to achieve the desired picture quality.

1-2 STILL ADJUSTMENT

There are some cases where the picture bounces vertically in the STILL mode when VIDEO CASSETTE was recorded on another VCR. In such a case, adjust the still knob, located as shown in Fig. 1, until bouncing stops.

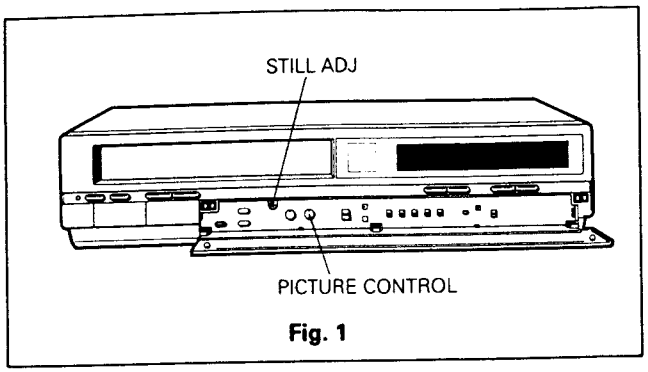


Fig. 1

2. REMOVAL OF PRIMARY PARTS

2-1 Replacement of Cassette Housing

2-1-1 Removal

A. Remove the Top Cover and Front Panel.
B. Place the PCB signal vertically in the service position.
C. Remove the screw Ⓐ retaining the Stay Stopper C, as shown in Fig. 2-1(A).
D. Remove the Stay Stopper C.
E. Remove the two screws (Ⓑ and Ⓒ) retaining the Stay front as shown in Fig. 2-1(A).
F. Remove the Stay front.
G. Remove the Cassette Housing loading belt as shown in Fig. 2-1(B).
H. Disconnect connector [CT], as shown in Fig. 2-1(C).
I. Remove the two screws (Ⓐ and Ⓑ) retaining the Cassette Housing as shown in Fig. 2-1(C).
J. Remove the Cassette Housing by sliding back in the direction of the arrow.

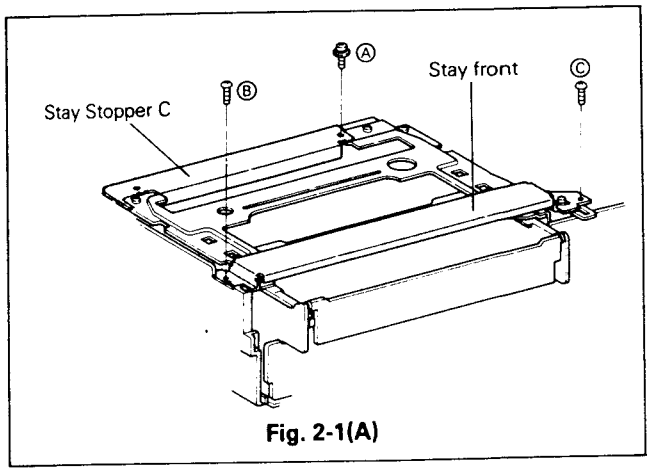


Fig. 2-1(A)

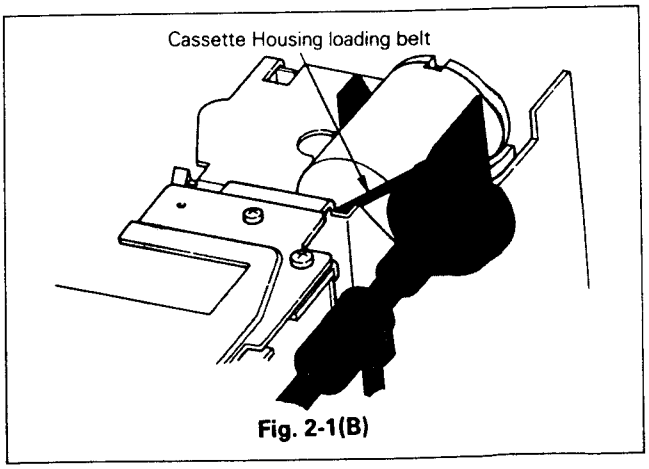


Fig. 2-1(B)

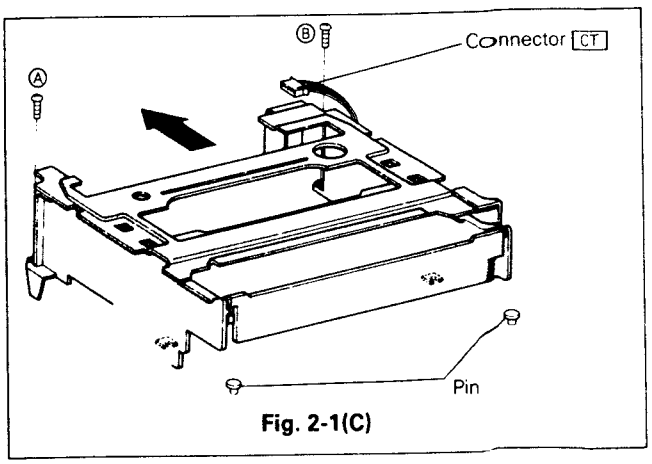


Fig. 2-1(C)

2-1-2 Replacement

To reassemble the cassette housing into the VCR adhere to the following steps. If these steps are not carried out properly, abnormal noise may be produced in the FF and REW modes or the tape may be damaged in playback.

A. Place the PCB Signal vertically in the service position.
B. Set the positioning U-holes at the right and left front of the cassette housing sides onto the pins at the front side of the main transport plate, refer to Fig. 2-1(C), then slide the cassette housing inside to the point where the holes for the housing screws are matched to the screw holes on the main plate.
C. Install the two cassette housing screws.
D. Reconnect connector [CT].
E. Attach the cassette housing loading belt shown in Fig. 2-1(B).
F. Attach the stay front as shown in Fig. 2-1(A).
G. Attach the Stay Stopper C as shown in Fig. 2-1(A).
H. Check that the cassette is loaded and unloaded smoothly without abnormal noise.
I. Check that, in the unloaded position, the loading prevention latch attached to the bottom of the cassette housing is fastened to the housing side strip. (See Fig. 2-1 (D))
J. If an irregularity is detected in steps (H) and (I) the cassette housing may be incorrectly assembled.
   Loosen the fastening screws, unfasten the cassette housing and readjust, as required.

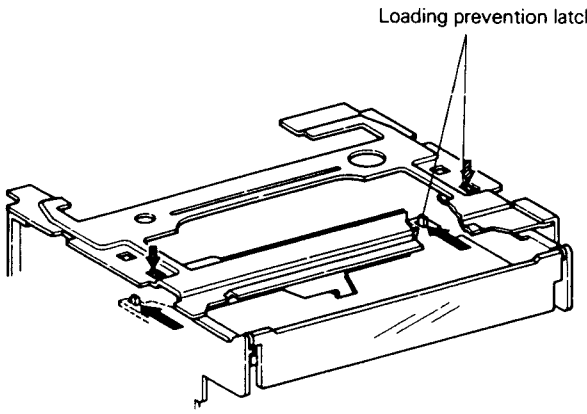


Fig. 2-1(D)

2-2 Replacement of Drum Motor/Video Head Assembly

2-2-1 Removal of Drum Motor/Video Head Assembly

A. Remove the Bottom Cover.
B. Remove the Stay Stopper C.
C. Remove the Regulator Transistor fastening screw as shown in Fig. 2-2(A) and remove the Regulator Transistor.
D. Remove the three drum retaining screws as shown in Fig. 2-2(B).
E. Holding the upper drum assembly, remove the complete Drum Motor/Video head assembly by gently pulling in an upward direction.
F. Disconnect connectors [DA] and [DB] from Drum assembly.

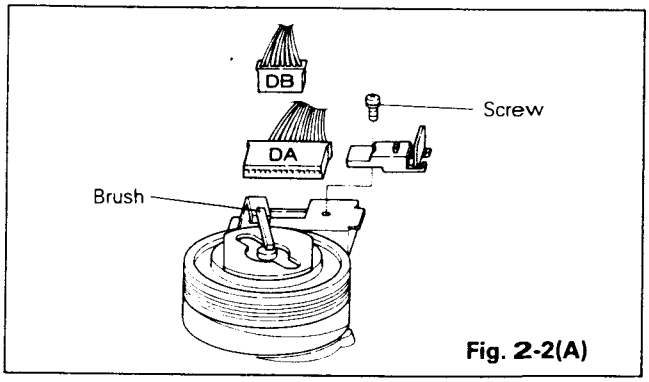


Fig. 2-2(A)

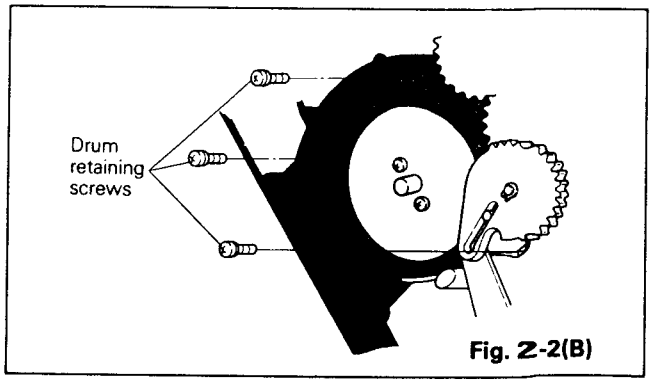


Fig. 2-2(B)

2-2-2 Installation of Drum Motor/Video Head Assembly

During installation, avoid holding the upper drum with bare hands. If this cannot be avoided, a cleaning procedure must be performed as described in "Cleaning" section, on page 4, upon completion of installation.

A. Reconnect connectors [DA] and [DB].
B. Carefully holding the complete drum assembly (with a piece of cotton cloth), slowly insert the drum assembly into its original drum mounting position.
   Note:
   Do not apply excessive force to the video heads as damage will result.

C. Secure with the three drum retaining screws previously removed, as shown in Fig. 2-2(B).
D. Fasten the Regulator Transistor mounting screw.
E. When the complete drum assembly has been changed, precise alignment requires checking. Check and adjust playback switching point, tracking preset, color recording level, FM recording level and interchangeability.

2-3 Replacement of Upper Drum

2-3-1 Removal of Upper Drum

A. Remove the brush fastening screw, as shown in Fig. 2-3(A) and remove the brush.
B. Unsolder the terminals Ⓑ, Ⓓ, Ⓕ and Ⓗ as shown in Fig. 2-3(A).

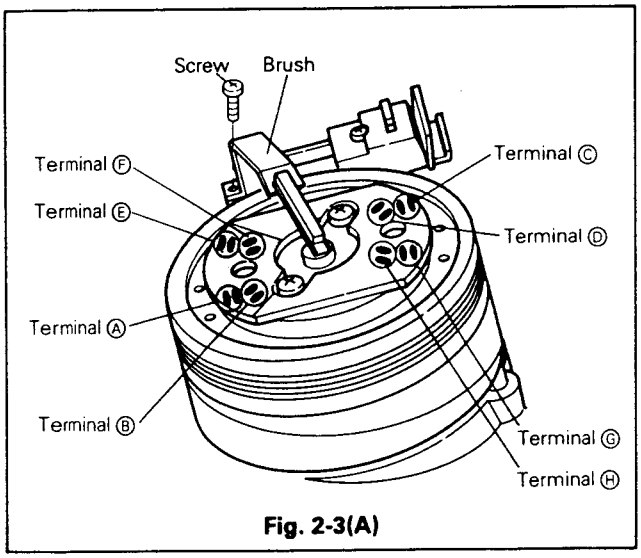


Fig. 2-3(A)

C. Remove the two upper drum fastening screws as shown in Fig. 2-3(B), and gently pull the upper drum in an upward direction.

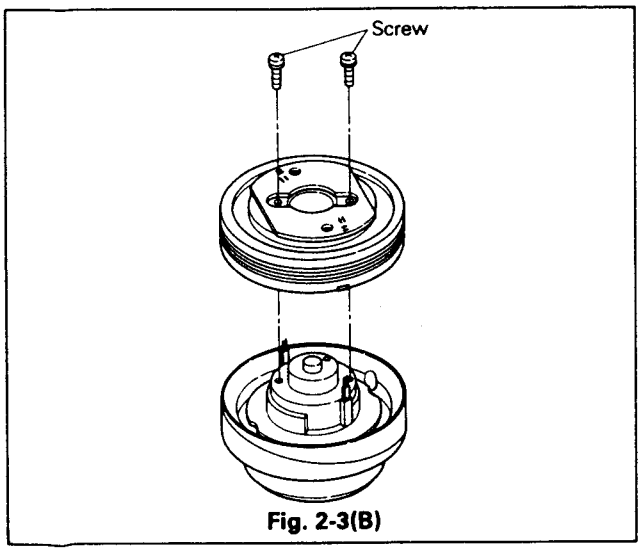


Fig. 2-3(B)

2-3-2 Installation of Upper Drum

Note

Extreme care must be exercised when handling the Video Heads.

A. Install the new upper drum to the lower drum as shown in Fig. 2-3(B).
B. Install the two upper drum mounting screws. (Fastening them one after the other)
C. Solder the terminals Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ, Ⓕ, Ⓖ and Ⓗ as shown in Fig. 2-3(A).
D. Fasten the brush with the brush retaining screw as shown in Fig. 2-3(A).

2-4 Replacement of Capstan Motor

2-4-1 Removal of Capstan Motor

A. On the underside of the transport deck, remove the two stopper-RD retaining screws (Ⓐ and Ⓑ) as shown in Fig. 2-4(A).
B. Remove the belt-R.
C. Remove the three Grip Rings (Ⓒ, Ⓓ and Ⓔ) retaining the Link B and remove the Link B as shown in Fig. 2-4(A).
D. Disconnect connector [DC] as shown in Fig. 2-4(A).
E. Remove the three screws retaining the Capstan motor as shown in Fig. 2-4(B).

2-4-2 Installation of Capstan Motor

A. Fasten the Capstan motor with the three Capstan motor retaining screws as shown in Fig. 2-4(B).
B. Reconnect connector [DC] as shown in Fig. 2-4(A).
C. Install Link B so the pin fits in the outside slot of CAM-GEAR-M, install the grip rings at three locations.
D. Install Belt-R and Stopper-RD.
E. Clean the capstan shaft after its installation complete by wiping with alcohol, etc.

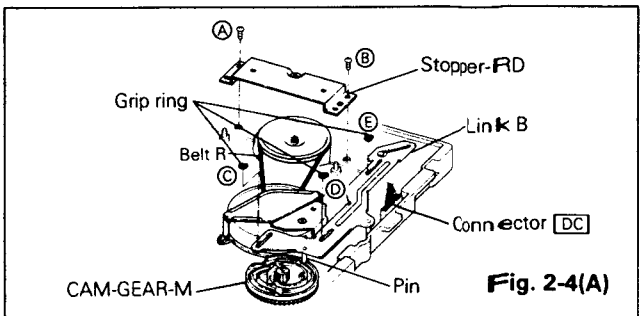


Fig. 2-4(A)

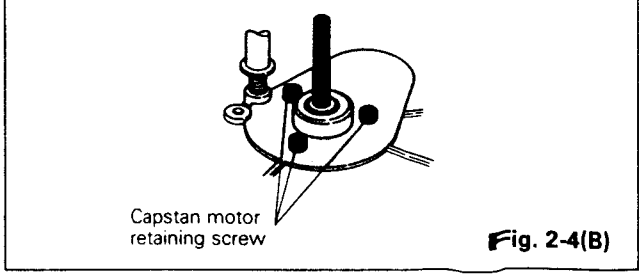


Fig. 2-4(B)

2-5 Replacement of Belt R

2-5-1 Removal of Belt R

A. Remove the two screws (Ⓐ and Ⓑ) retaining the stopper-RD as shown in Fig. 2-5.
B. Remove the two rotor thrust bearing retaining screws (Ⓒ and Ⓓ) as shown in Fig. 2-5.
C. Lift the rotor thrust bearing a little and remove the belt R as shown in Fig. 2-5.

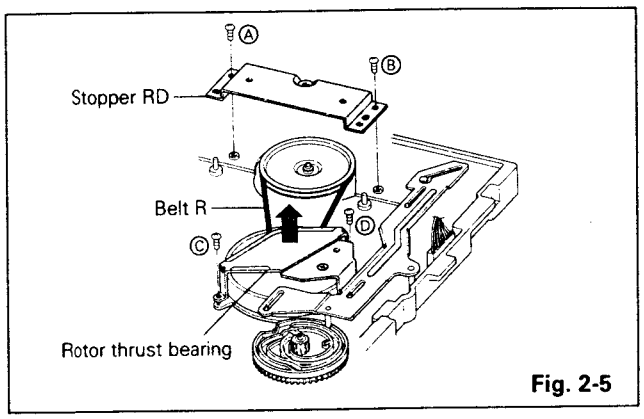


Fig. 2-5

2-5-2 Installation of Belt-R

A. A new Belt-R shall be installed according to the reversed sequential order (from Item Ⓒ ~ Item Ⓐ) in paragraph 2-5-1.

2-6 Replacement of Loading Motor

2-6-1 Removal of Loading Motor

A. Disconnect connector [CM] on the PCB CONTROL.
B. Remove the cassette housing loading belt as shown in Fig. 2-6(A).
C. Remove the two screws retaining the Holder as shown in Fig. 2-6(A).
D. Remove the loading belt as shown in Fig. 2-6(A).
E. Unlock the three supports (Ⓐ, Ⓑ and Ⓒ) shown in Fig. 2-6(A) and remove the Holder-Worm.
F. Unlock the two Motor Supports (Ⓓ and Ⓔ) as shown in Fig. 2-6(A) and remove the Loading motor.

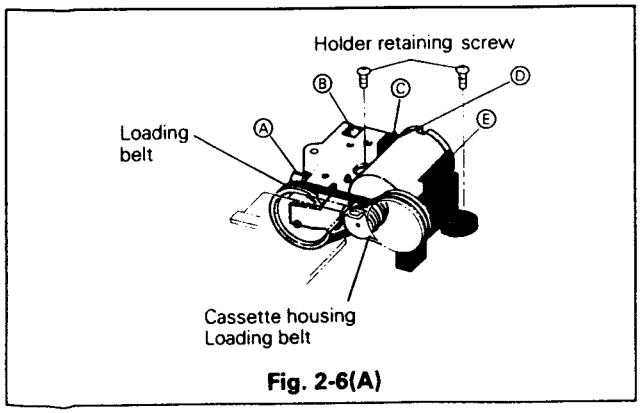


Fig. 2-6(A)

2-6-2 Installation of Loading Motor

Note:
When the LEVER-TRIG which is shown in Fig. 2-6(B) is removed it shall be installed as shown in Fig. 2-6(C).

A. Following the reverse sequential order (from Item Ⓕ ~ Item Ⓐ) in paragraph 2-6-1 to install a new loading motor.

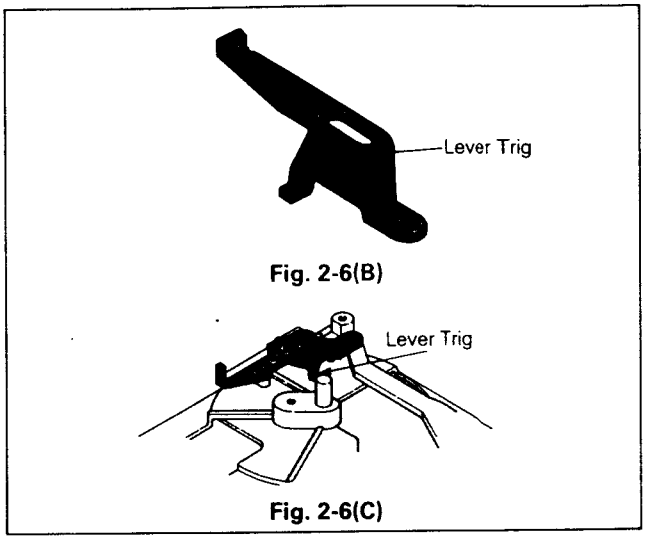


Fig. 2-6(B)

Fig. 2-6(C)

2-7 Replacement of Pinch Roller

A. Pull the Pinch Roller Cap upward to remove. (Refer to Fig. 2-7).
B. Insert the new Pinch Roller. (Refer to Fig. 2-7).
C. Replace the Pinch Roller Cap. Make sure that the direction of the Cap is within the range shown in Fig. 2-7.

Note:
It is advisable, when replacing the Pinch Roller Cap, to support the Arm-pinch from underneath to prevent it from being bent during this operation.

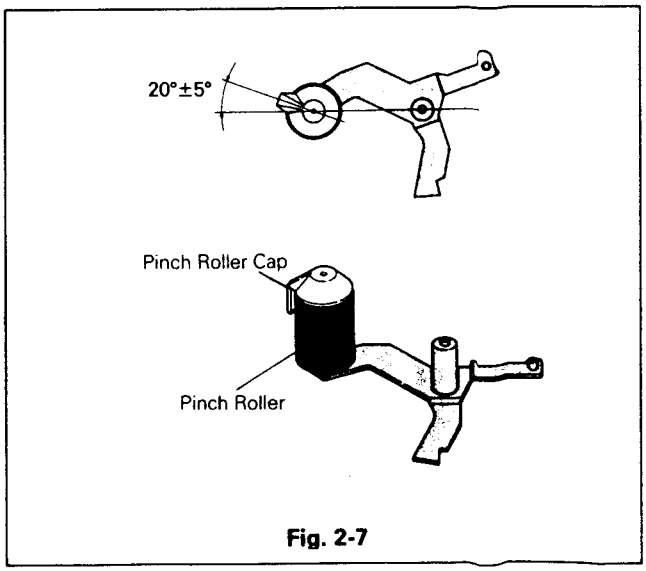


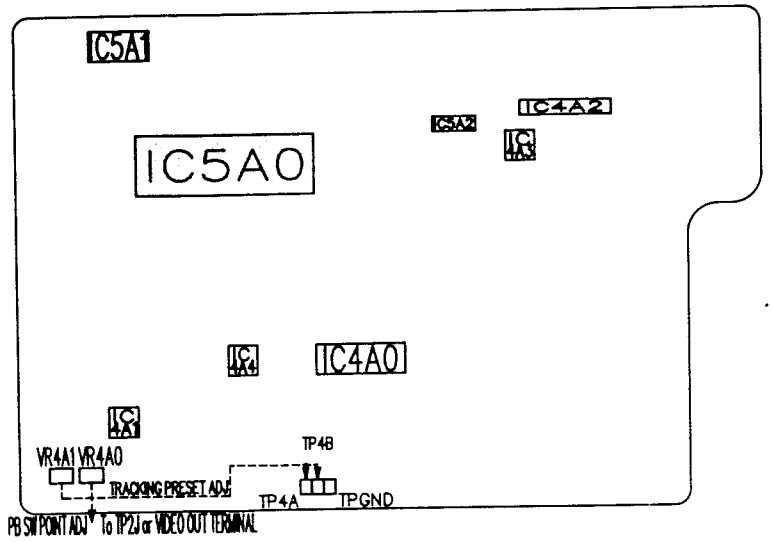
Fig. 2-7

3. ELECTRICAL ADJUSTMENT

Circuit adjustments become necessary, in most cases, due to the wear of mechanical parts or following the replacement of critical components such as the video head. Certain circuit defects can often cause circuit adjustments to vary considerably. Should this occur, be sure to determine the nature of the defect and repair prior to proceeding with adjustments.

Always use the test equipment recommended for a given adjustment procedure. If the appropriate test equipment is not available, it is recommended that adjustments NOT be attempted. Refrain from the indiscreet adjustment of circuit controls unless properly equipped to do so.

PCB CONTROL (Parts side)



PCB SIGNAL (Pattern side)

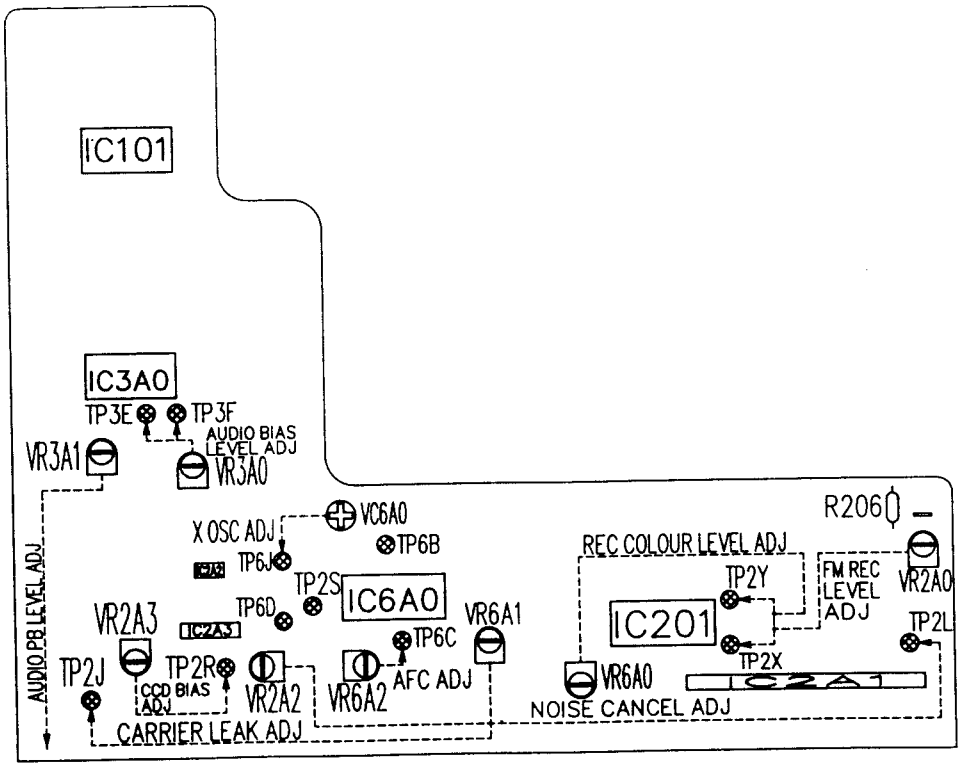


Fig. 3-1

3-1 Servo Circuit Adjustment

3-1-1 Playback Switching Point Adjustment

A. Turn the tracking control VR480 to centre click stop position.
B. Playback the grey scale step signal of the alignment tape.
C. Connect the oscilloscope's EXT trigger to TP-2H on the PCB-SIGNAL.
D. Set the EXT TRIGGER to "−".
E. Connect the oscilloscope to the video output socket or TP-2J and adjust VR4A0 so that the trigger point is located at 6.5 ± 1H before the vertical synchronizing signal, Fig. 3-2.
F. Set the EXT TRIGGER to "+".
G. Check that the trigger point is located 6.5 ± 1H before the vertical sync signal, Fig. 3-2.

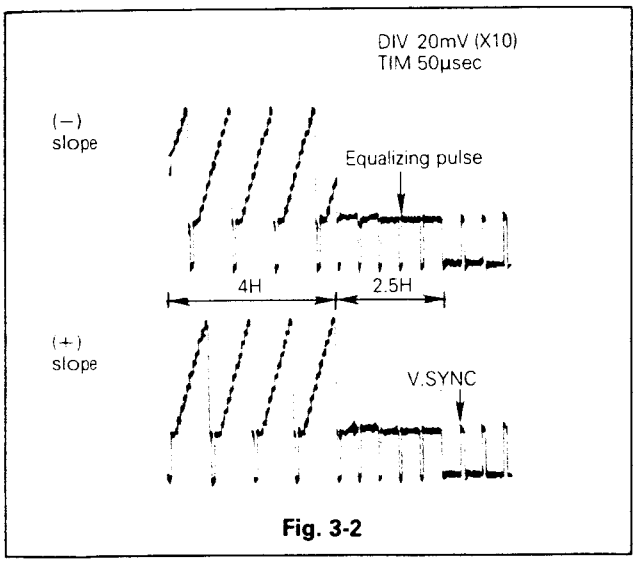


Fig. 3-2

3-1-2 Tracking Preset Adjustment

A. Turn the tracking control VR480 to the centre click stop position.
B. Playback the selfrecorded tape. (LP mode)
C. Connect CH1 of the oscilloscope to TP4A and CH2 to TP4B on PCB CONTROL.
D. Adjust VR4A1 so that the falling edge of TP4A coincides with the falling edge of TP4B as shown in Fig. 3-3.

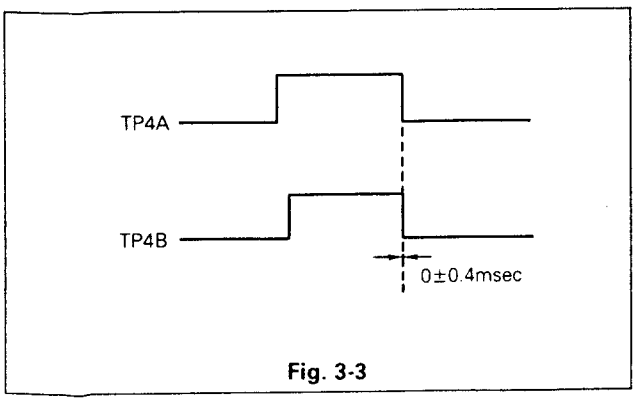


Fig. 3-3

3-2 Y/C Signal Circuit Adjustment

3-2-1 CCD Bias Adjustment

A. Playback the colour bar signal of an alignment tape.
B. Connect an oscilloscope to test point TP-2R on PCB-SIGNAL.
C. Adjust VR2A3 so that the SYNC signal and upper side of waveform is not strained, as shown in Fig. 3-4.

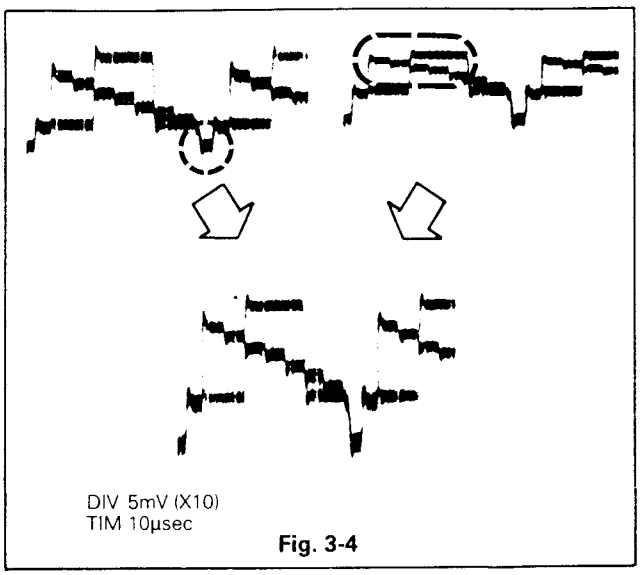


Fig. 3-4

3-2-2 Noise Cancel Adjustment

A. Playback the colour bar signal of an alignment tape.
B. Connect an oscilloscope to test point TP-2L on PCB-SIGNAL.
C. Adjust VR2A2 so that the video signal disappears.
If noise remains after the video signal disappears, adjust VR2A3 slightly counter clockwise as seen from parts side so that the noise is minimum.

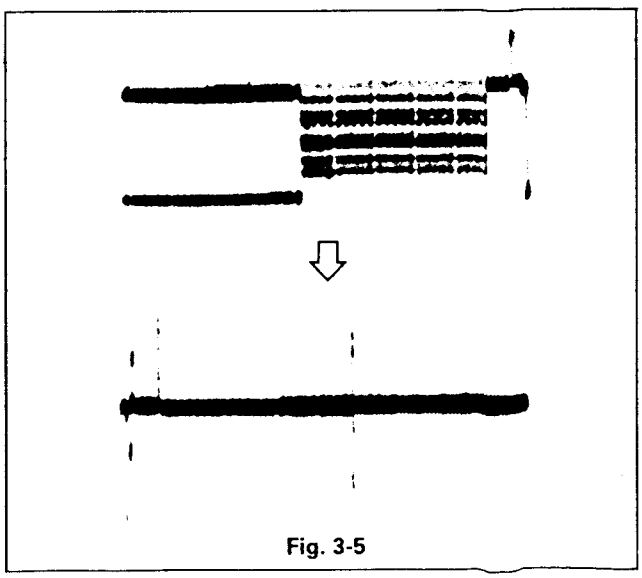


Fig. 3-5

3-2-3 AFC Adjustment

A. Set the INPUT SW to CAMERA Position.
B. Short circuit Pin ⑳ and Pin ⑰ of VIDEO/AUDIO terminals shown in Fig. 3-6.
C. Ground test point TP-6B (Pin ㉓ of IC6A0) and test point TP-6D (Pin ⑰ of IC6A0) on PCB SIGNAL and set the recorder to STOP mode.
D. Connect a frequency counter to TP-6C on the PCB SIGNAL.
E. Adjust VR6A2 so that the frequency at TP-6C is 623KHz ± 5KHz.

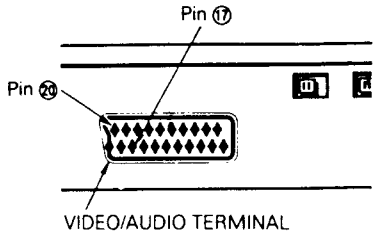


Fig. 3-6

3-2-4 Xtal OSC Adjustment

A. Playback the colour bar section of an alignment tape.
B. Connect a frequency counter to TP-6J (4.43MHz OUT) on the PCB SIGNAL.
C. Adjust VC6A0 so that the frequency at TP-6J is 4.433619MHz ± 10Hz.

3-2-5 Carrier Leak (chroma) Adjustment

A. Playback the colour bar section of the alignment tape.
B. Connect an oscilloscope to TP-2J on PCB-SIGNAL.
C. Adjust VR6A1 Carrier Leak for minimum amplitude at the point shown in Fig. 3-7.

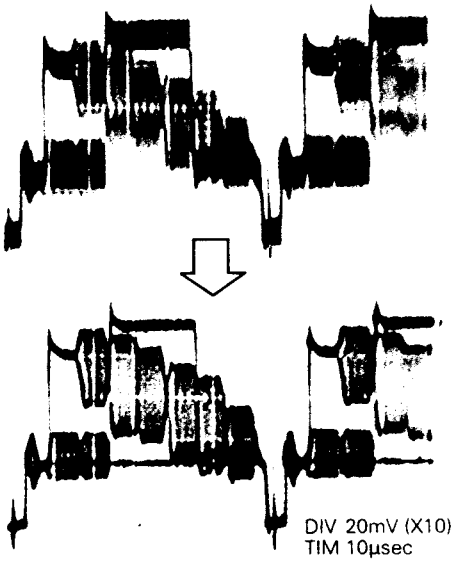


Fig. 3-7

3-2-6 FM Record Level Adjustment

A. Supply an RF signal (colour bar) to the recorder and set it to the LP RECORD mode.
B. Connect the oscilloscope to TP-2Y and TP-2X with a pad (REC CURRENT ADJ JIG: 859C34706) on the PCB SIGNAL as shown in Fig. 3-8.
C. Turn the VR6A0 fully clockwise as seen from parts side of the PCB SIGNAL.
D. Adjust VR2A0 (REC-LEVEL) on PCB-SIGNAL for a level of 200mVp-p, as shown in Fig. 3-9.

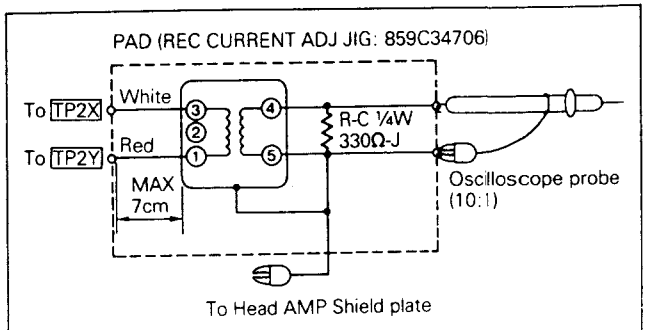


Fig. 3-8

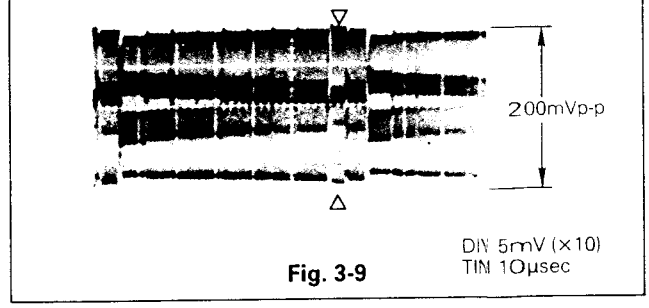


Fig. 3-9

3-2-7 Recording Colour Level Adjustment

A. Supply an RF signal (colour bar) to the recorder and set it to the LP RECORD mode.
B. Short circuit both extremes of R206.
C. Connect the oscilloscope to TP-2Y and TP-2X with a pad (REC CURRENT ADJ JIG: 859C34706) on the PCB SIGNAL as shown in Fig. 3-8.
D. Adjust VR6A0 for a level of 54mVp-p, as shown in Fig. 3-10.

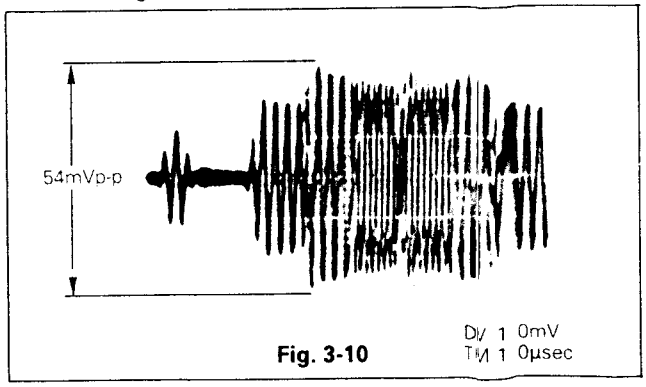


Fig. 3-10

3-3 Audio Circuit Adjustment

3-3-1 Playback Level Adjustment

A. Playback the colour bar section of an alignment tape.
B. Connect an AC voltmeter to Pin ① (AUDIO OUT) with AC voltmeter GND to Pin ④ of Scart socket.
C. Adjust VR3A1 (PB-LEVEL) for an output level of −8dB.

3-3-2 Bias Level Adjustment

A. Connect a Capacitor between Pin ② and Pin ④ of the Scart socket (Refer to Fig. 3-11) and set the recorder to RECORD mode.
B. Connect an AC voltmeter with a probe (high pass filter) to TP-3E and TP-3F as shown in Fig. 3-12.
   Note:
   Be careful that the AC voltmeter housing does not touch the VCR chassis.
C. Confirm that the monitor TV etc. does not affect the indication of the AC voltmeter and then adjust VR3A0 (BIAS LEVEL) for 2.20mV.r.m.s.
   Note:
   Do not set the VCR to PLAY mode with the AC voltmeter connected. (The audio amplifier will be over-loaded.)

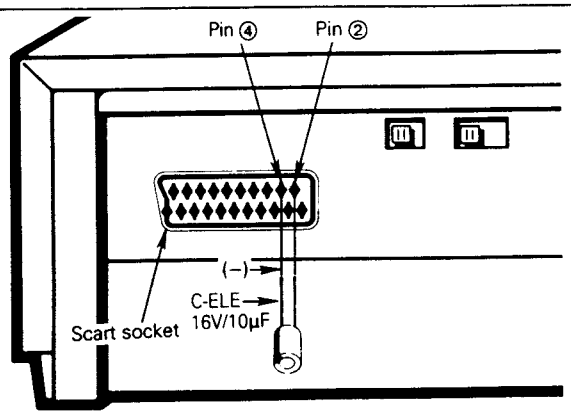


Fig. 3-11

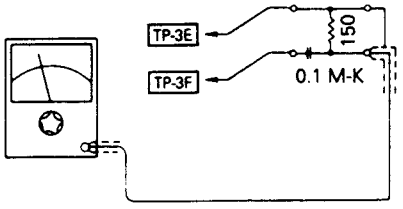


Fig. 3-12

4. MECHANICAL ADJUSTMENT

4-1 Tension Pole Position Adjustment

A. Cover the END SENSOR with a small piece of tape and set the recorder to the playback mode.
B. During the playback mode, make sure that the tension pole is within the range as shown in Fig. 4-1(A).
C. If the tension pole is outside the range, move the holder shown in Fig. 4-1(B) and adjust the position of the tension pole.

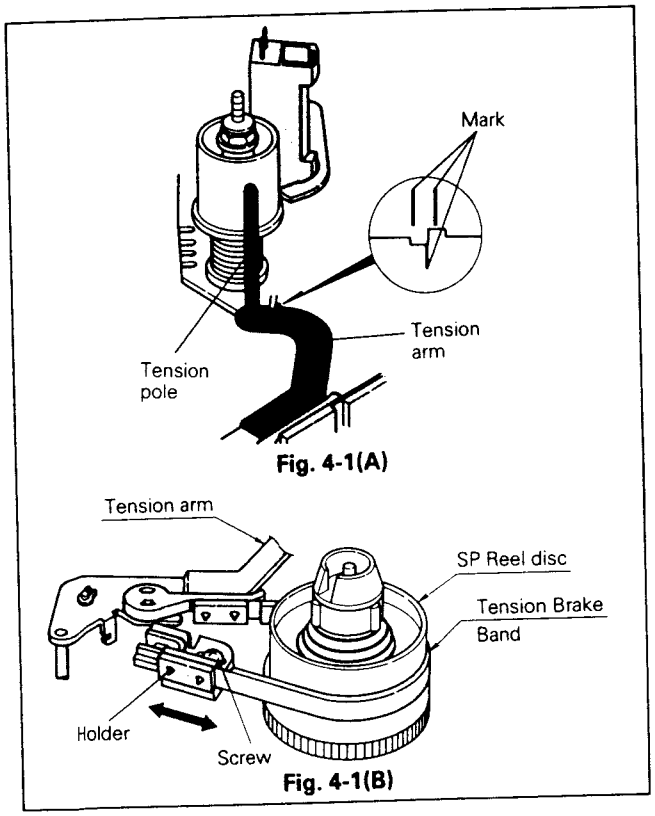


Fig. 4-1(A)

Fig. 4-1(B)

Note:
When using a dummy cassette which has been supplied for current service, there are often the cases where the dummy cassette sticks inside the deck, and cannot be removed easily. To prevent this occurence cut out the sections of the dummy cassette shown in Fig. 4-1(C).

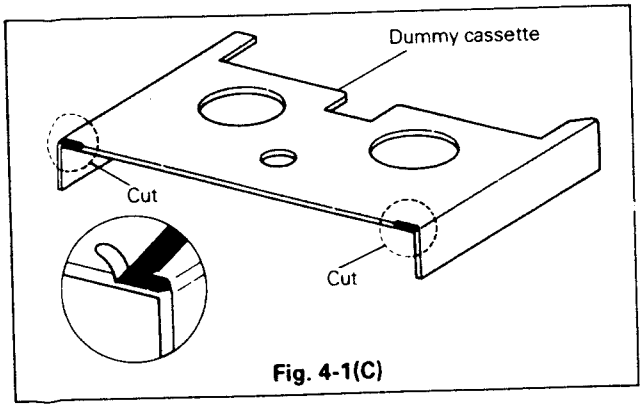


Fig. 4-1(C)

4-2 Installation of Master Plane Jig

A. Remove the Top Cover and Front Panel of the recorder.
B. Insert a dummy cassette in the cassette housing and engage the play mode to bring about the loaded condition.
(i.e. when the VCR is loaded with either a cassette tape or dummy cassette)
C. After loading has been completed remove the power cord from the AC source.
D. Remove the cassette housing.
E. Ensure that the surface of the transport deck is free from any dust, dirt, or foreign matter and install the master plane jig, as illustrated in Fig. 4-2.

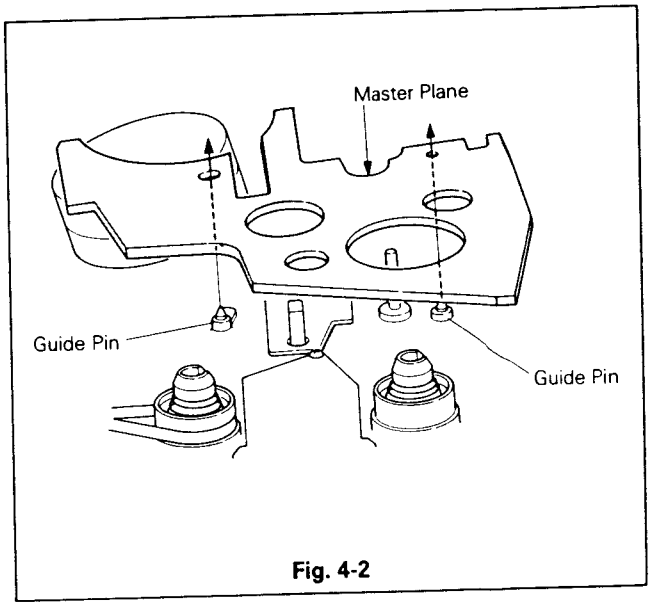


Fig. 4-2

4-3 Supply Impedance Roller and Take-up Guide Pole Height Check and Adjustment

A. Install the master plane jig as described in item 4-2.
B. By using the height adjust square, make sure that the collar at the bottom of the take-up guide pole slides under part Ⓐ of the square but not under part Ⓑ as shown in Fig. 4-3.
C. Make sure that the flange at the bottom of the supply Impedance roller slides under part Ⓐ of the square but not under part Ⓑ as shown in Fig. 4-3.

In this case, use the height adjust square with the "SP" mark to check the Supply Impedance roller, and the height adjust square with the "TU" mark to check the take-up guide pole.

Note:
When no problem is involved with the transport system, it is not necessary to adjust the deviations even if they are involved in the Items (B) and (C).

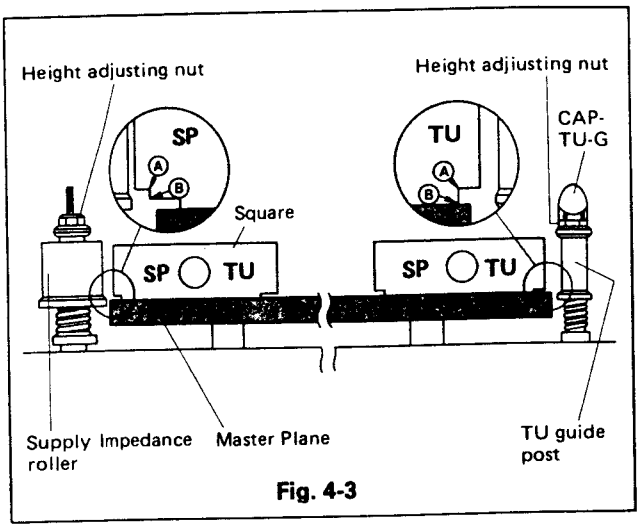


Fig. 4-3

D. When Items B and C are not fulfilled, height check shall be executed.

4-4 Reel Disc Height Check and Adjustment

A. Install the master plane jig as described in 4-2.
B. Make sure that the supply reel disc and the take-up reel disc rotate smoothly when the tension brake and the take-up sub-brake are released by hand.
   * If not rotating smoothly, check to be sure they are not being hindered by the brake shoe or contact from adjacent components.
   * Make sure that the reel disc shaft is free from binding.
C. Examine the height of the reel disc with the "Height Adjust" square as illustrated in Fig. 4-4. The reel disc height should be between levels A & B of the square as illustrated.
D. Inspect the height in two directions at right angles to each other. If necessary adjust the height of the Reel discs by adding or removing poly slider washers (552C00604: 0.13mm).

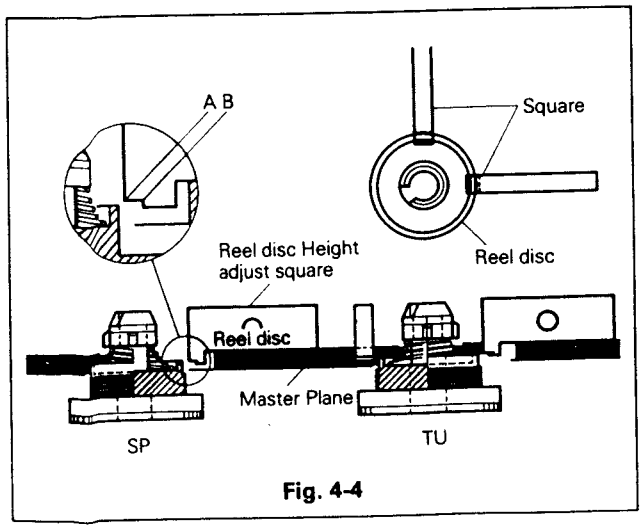


Fig. 4-4

4-5 Arm Take-up Guide Pole Adjustment

A. Install the master plane jig as described in 4-2.
B. Place the "Height Adjust" Square on the master plane and be sure that the lower flange of the arm take-up guide pole is level with the lower edge of the "TU-G" side of the square. If the flange height deviates, adjust it with the height adjust nut.

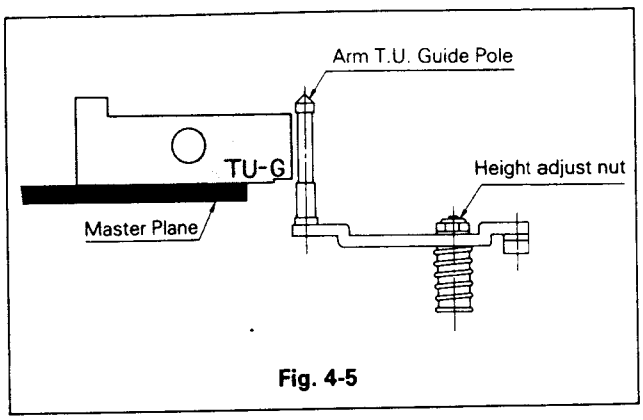


Fig. 4-5

4-6 Back Tension Check and Adjustment

A. Insert the Back tension meter and set the recorder to the playback mode.
B. Check that the mean value is 34 ± 4g-cm on the supply side.
C. If the mean value exceeds 38g-cm adjust the value to 34g-cm by adjusting the location of the spring (A) in the direction of arrow ⓐ as shown in Fig. 4-6.
D. If the pointer mean value is much less than 30g-cm, adjust it to 34g-cm by adjusting the location of the spring (A) in the direction of arrow ⓑ.
   Note:
   The deviation of back tension value is not specified. However, if it fluctuates by more than 5g-cm after a stabilizing period, then a problem exists in one of the associated parts.
   Check and repair as required.
E. Check that no skew distortion is observed during playback.

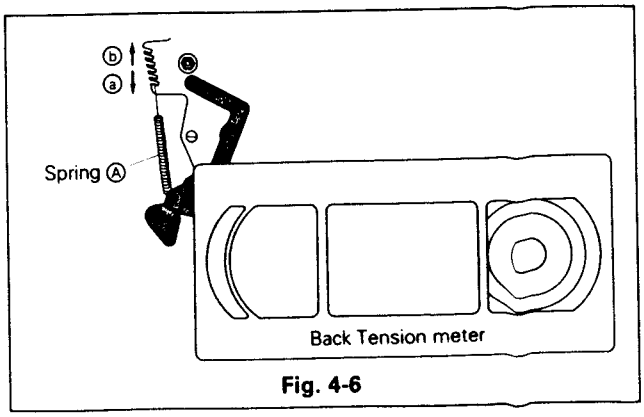


Fig. 4-6

4-7 Positioning of Gears and their Installation Sequence

A. Set the gears so the positioning bore holes both for CAM-GEAR-M and main plate line up with each other (see Fig. 4-8(B)), confirm that the UNIT-ARM-MAIN pin on the front side of deck fits, in the 2 mm slot of CAM-GEAR-M, and the LEVER-AP pin shall be fits, in the 3 mm slot (see Fig. 4-7(A)).

B. Set ARM-LOAD pin so it fits in the slot of CAM-GEAR-M as shown in Fig. 4-7(B).

C. Fix CP-BRAKE pin so as to be held outside of CAM-GEAR-M.

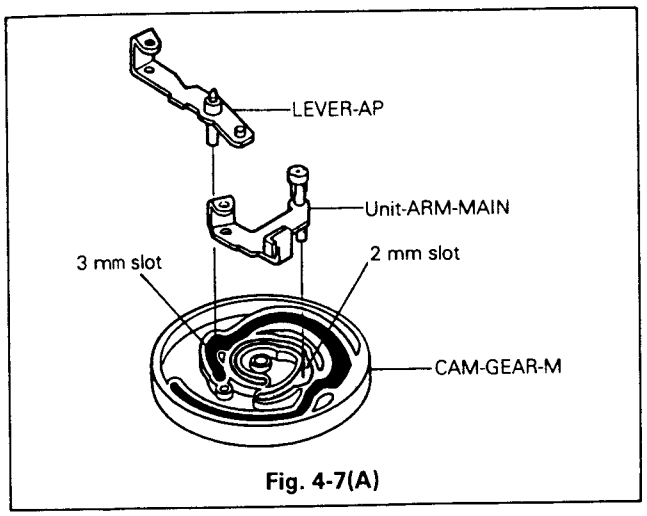


Fig. 4-7(A)

D. Install ARM-LOAD-T, refer to Fig. 4-7(B).

E. Install GEAR-T-L so it aligns with the positioning hole of ARM-LOAD-T.

F. Install ARM-LOAD-S so the hole lines up with the positioning hole of ARM-LOAD-T.

G. Install CAM-TENS so the positioning hole lines up with the positioning hole of ARM-LOAD, etc.

H. Install Link-B so the pin to inside the slot of CAM-GEAR-M as shown in Fig. 4-7(B).

I. Install GRIP-RINGS, at 8 locations.

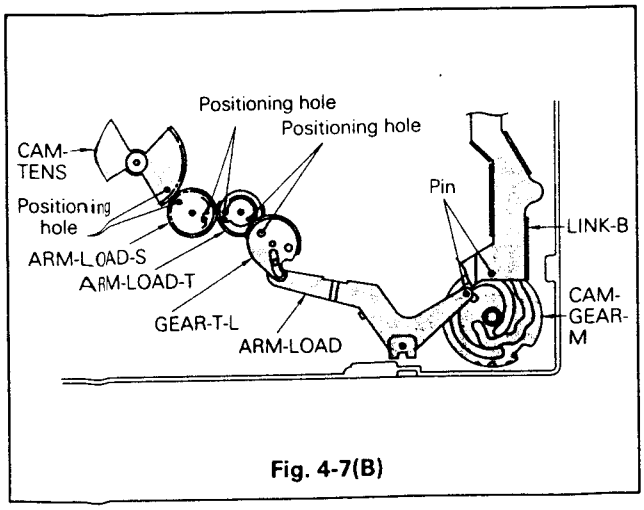


Fig. 4-7(B)

4-8 Mode Switch Attachment and Adjustment

Note:

When adjusting or repairing the mode switch ensure that the VCR is turned off in the "STOP" mode.

Prior to adjustment, it should be confirmed that the cassette housing is in the status of cassette-in. (STOP mode)

A. Align both Matching marks on the mode switch, as shown in Fig. 4-8(A).

B. The continuity of each of the pins should be check to ground with an ohmmeter by connecting its red lead to GND, and black lead to each specific pin in sequence. Rotate the gear so the continuity conforms with the that given in Fig. 4-8(A).

Note:

The ohmmeter should be used at a high range (X1000 or higher)

Checking with ×1 range allows current of over 40mA to flow and damage could result

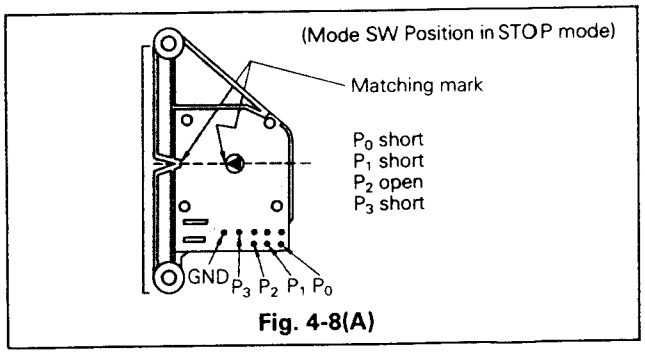


Fig. 4-8(A)

C. Set the CAM-GEAR-M so the positioning hole in the gear lines up with the positioning hole in the main plate, as shown in Fig. 4-8(B).

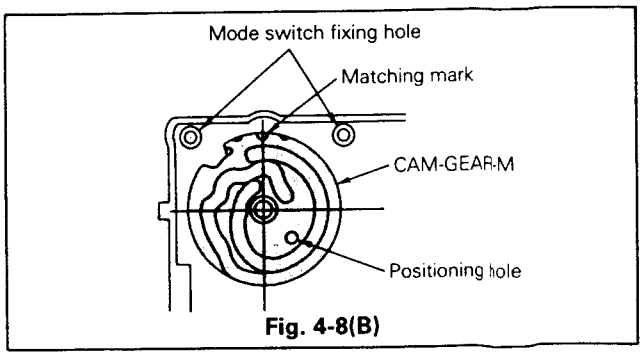


Fig. 4-8(B)

D. Secure the mode switch to deck, taking care that the gears do not rotate.

E. Repeat the continuity test given in Item B, if any deviation is found after the mode switch is mounted remove the mode switch and repeat the procedures given in Items Ⓑ ~ Ⓔ, until correct continuity is achieved.

4-9 Half Loading Unit Adjustment

4-9-1 Replacement of Half loading Unit

Remove each parts in the following order.

① Top cover
② Audio/Control Head
③ Taper Nut
④ Front Loading Unit
⑤ Half Loading Unit (Set Screws Ⓒ, Ⓓ and Ⓔ are shown in Fig. 4-9(A).

For installation of the parts install in reverse order and after the installation of Front Loading Unit ④ execute the adjustment of the half loading gear position (See 4-9-2).

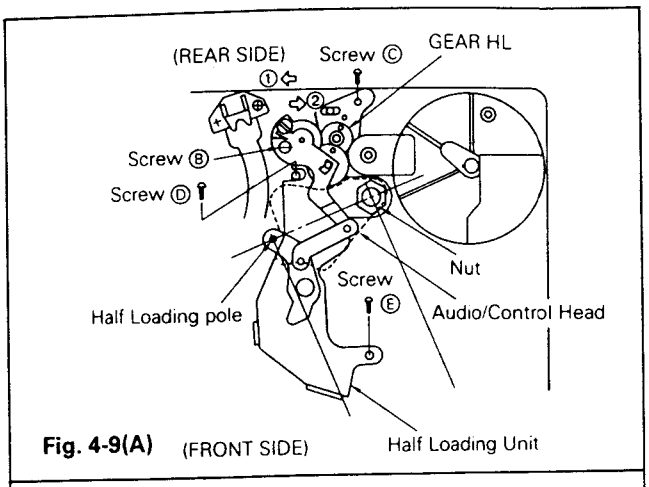


Fig. 4-9(A)

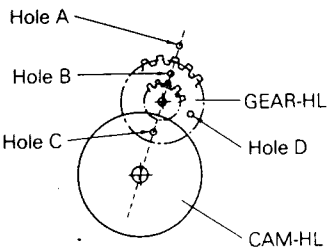


Fig. 4-9(B)

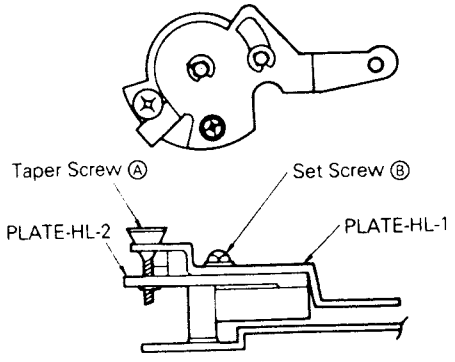
4-9-2 Adjustment of Half Loading Gear Position

A. Insert a dummy cassette in the cassette housing (at this time the recorder will go into the PLAY mode), then set the STOP mode. (At this time the half loading pole moves nearly to the audio/control head.)
B. Disconnect the power source plug.
C. Remove the set screw Ⓒ in the half loading unit and loosen the set screws Ⓓ and Ⓔ (see Fig. 4-9(A)). Slide the half loading unit in the direction of the arrow ① ⇦ to align the three holes B, C and D in the half loading gear to the position shown in Fig. 4-9(B).
D. Slide the half loading unit in the direction of the arrow ② ⇨ and secure in this position with screws Ⓒ, Ⓓ and Ⓔ. Adjust the half loading pole position according to 4-9-3 befor performing interchangeability and A/C Head adjustments and secure it with screw Ⓑ for the present.
E. Connect the power source plug and eject the dummy cassette.
F. After performing interchangeability and audio/control head adjustments, readjust the half loading pole position.

4-9-3 Adjustment of Half Loading Pole Position

Adjust the position of the half loading pole after interchangeability and A/C head adjustment is made.

A. Disconnect the power supply plug with the transport in the fast forward mode or the rewind mode.
B. Loosen the set screw Ⓑ so that PLATE-HL-1 can be moved.
C. Adjust the taper screw Ⓐ so that the gap between the half loading pole and AE-HEAD shall be 0.45 ± 0.15 mm at the top of the pole. (Fig. 4-9(C))
D. Tighten the set screw Ⓑ. After tightening, check again if the gap is 0.45 ± 0.15 mm. If not, loosen the set screw Ⓑ and adjust the gap again.
E. On completion of adjustment, lock the taper screw Ⓐ and the set screw Ⓑ with a locking compound.



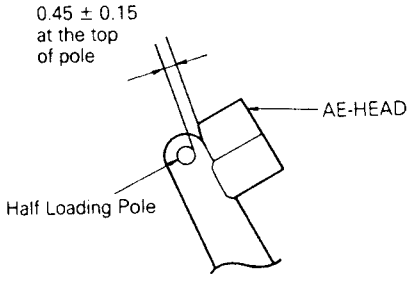


Fig. 4-9(C)

4-10 Tape Path Check and Adjustment

4-10-1 Tape Run Check

A. Load a recorded tape. Repeat playback and stop several times and check the following.

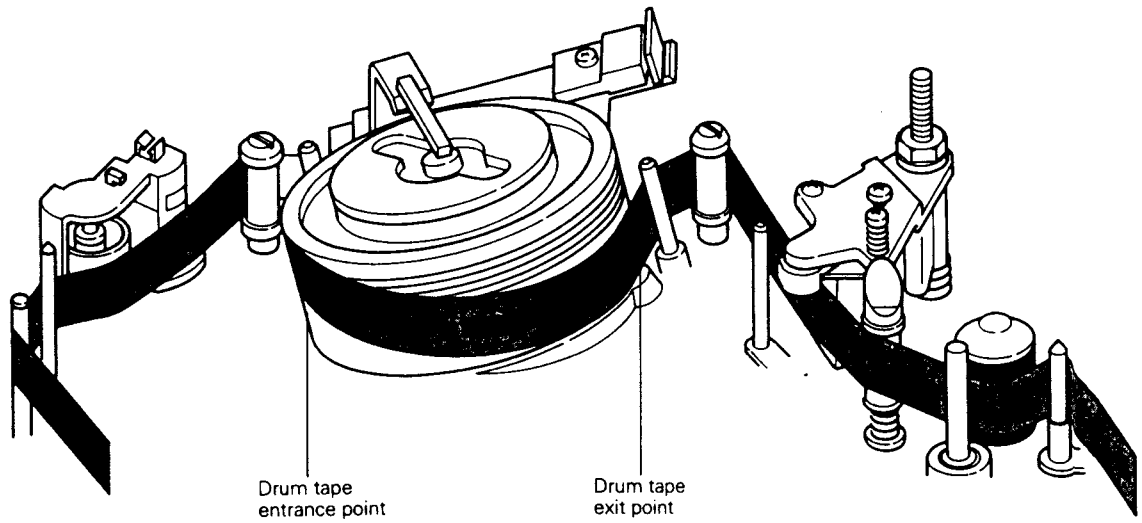


Fig. 4-10(A)

B. Be sure that the tape does not run outside the drum lead path at the drum entrance and exit points in the playback mode.

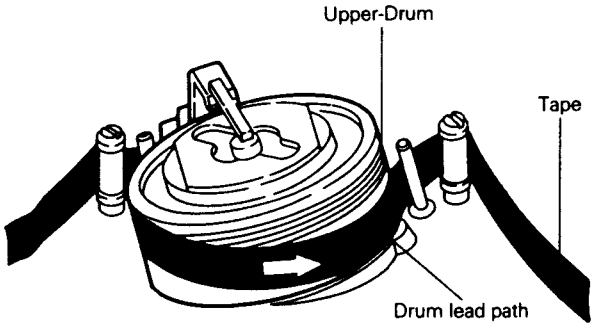


Fig. 4-10(B) Drum Lead Check

Note:

* If the tape runs above the drum lead path, a "pit-a-pat" sound is generated because the video head catches the tape edge.
* If the tape runs below the drum lead path, it will become curled or creased, and may also cause noise or instability in the picture.

C. Be sure that the tape is not curled or creased at either the guide roller or the guide poles on the supply and take-up side, in loading, playback and unloading.

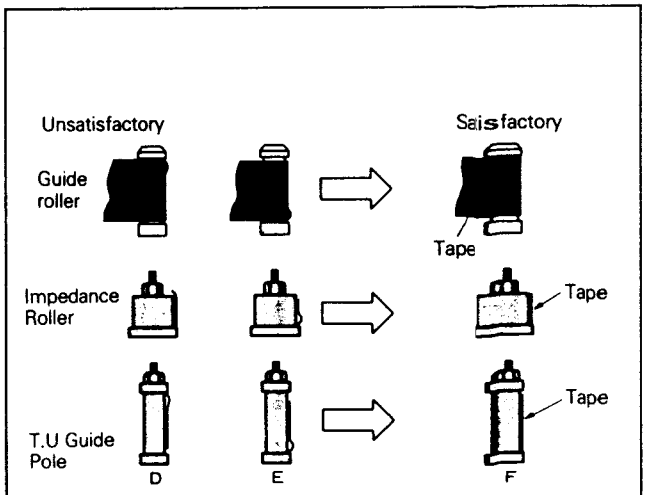


Fig. 4-10(C)

D. Ensure that the tape is not damaged at areas "C" and "D" of the drum lead path where the tape is picked-up on the drum at loading and separates from the drum at unloading (check at the end of E-180). Also ensure that no noise is generated.

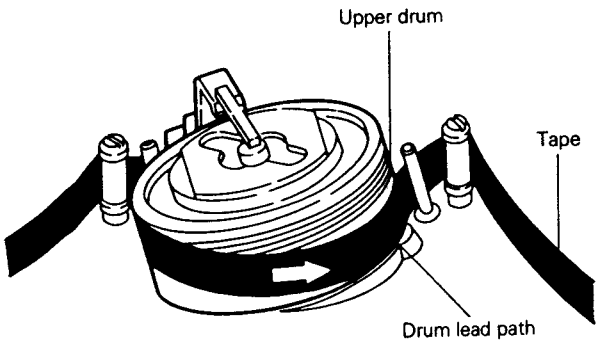


Fig. 4-10(D) Drum Lead Check [Correct condition]

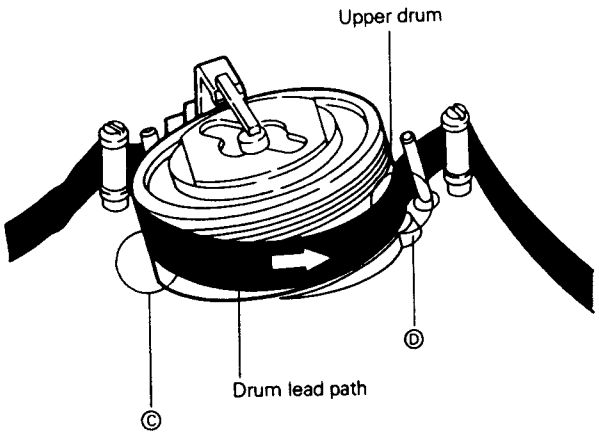


Fig. 4-10(E) Drum Lead Check [NG condition]

4-10-2 Guide Roller Height Adjustment

The following adjustment is required only when an irregularity is detected in the "Tape Run Check" stated in (4-10-1).

A. Slightly loosen the set screws of the supply and the take-up guide rollers.

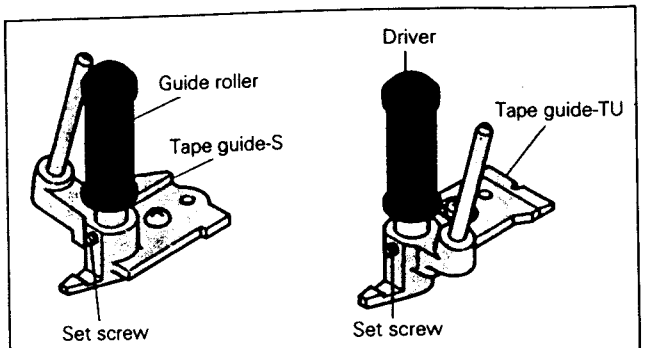


Fig. 4-10(F)

Note:
Loosen the set screw just enough to be able to move the guide roller with the hex key. If loosened excessively, the guide roller may be moved by the run of the tape. In this case, tighten the set screw slightly.

B. Load the recorded tape and set the recorder to the playback mode.

C. Slowly rotate the supply guide roller with −(minus) driver (Do not rotate more than 180° at a time) and adjust so that the tape will run smoothly over the drum, maintaining contact with the drum lead path.

D. Similarly turn the take-up guide roller and adjust the point at which the tape separates from the drum.

Note:
Rotate the guide roller a little at a time. Careless rotation may damage the tape.

4-10-3 Take-up Guide Pole

Note:
The height of the take-up guide pole is not adjusted at this stage, because such adjustments are made using the jig described in section 4-3.

A. Load a recorded tape and set the recorder to the playback mode.

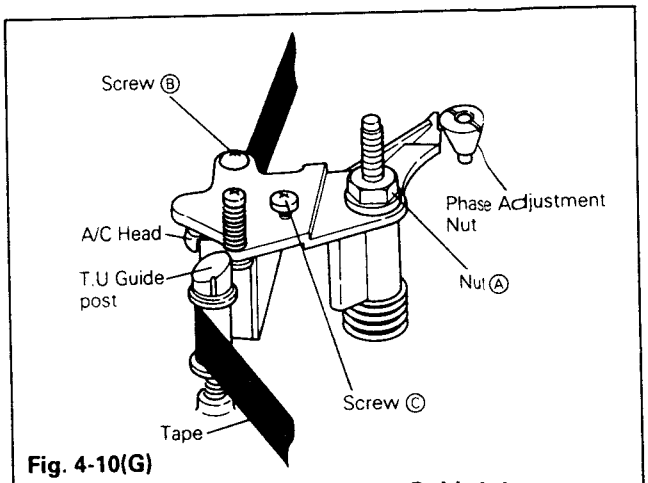


Fig. 4-10(G)
Tape Run Adjustment at Take-up Guide Pole

B. Rotate the audio/control head inclination adjusting screw (C) and adjust so that the tape will run smoothly at the take-up guide pole as illustrated in Fig. 4-10(C) Ⓕ.
C. Be sure that the tape is not creased or twisted at the take-up guide pole in playback.

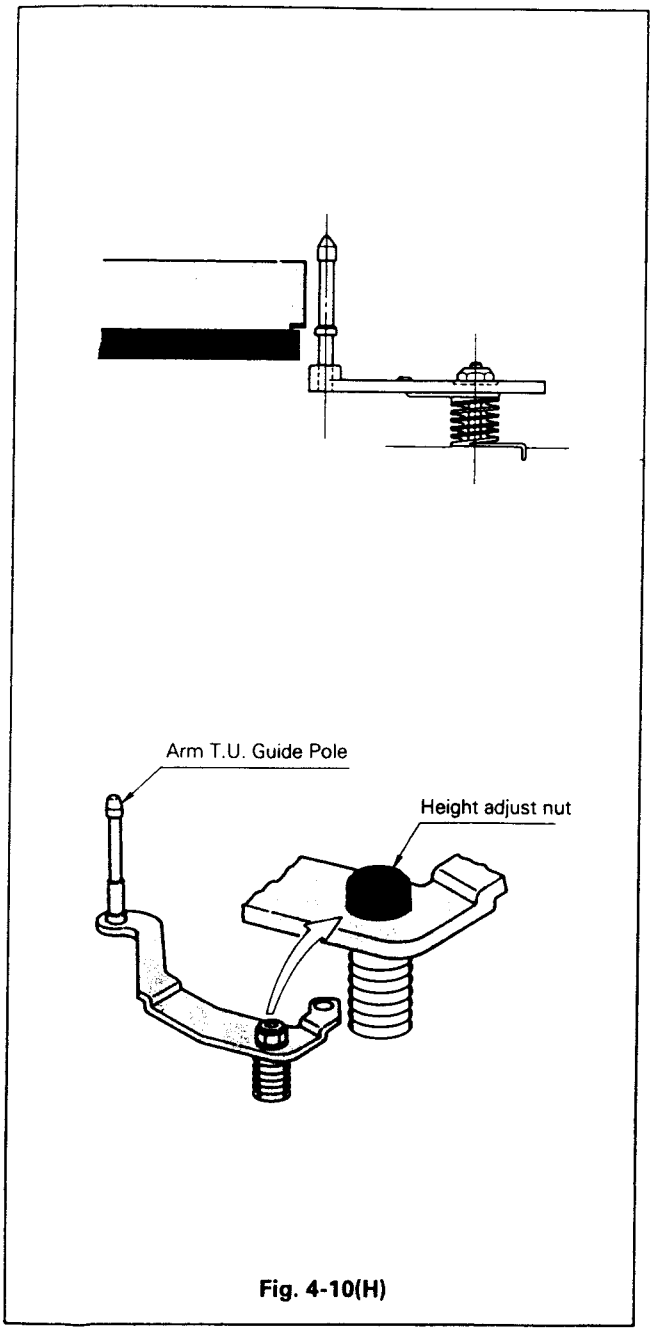


Fig. 4-10(H)

D. Should the tape be creased or twisted at the arm take-up guide pole, rotate the height adjusting nut until the crease or twist on the tape disappears. (Refer to Fig. 4-10(A) and Fig. 4-10(H)).
Note:
Do not rotate the adjusting nut more than ± one turn.

4-10-4 Angle Alignment of Take up Slant Pole

Note:

- Normally the slant pole angle does not require adjustment since it is precisely set at the factory.

A. Loosen the retaining screw shown in Fig. 4-10(I) slightly, it should be noted that excessive loosening often causes the guide roller to stick, preventing guide roller rotation during tape run.
B. When any tape folding or tape shrinkage is incurred on the top side of guide roller, rotate the slant pole assembly to widen the slant pole angle (Direction (A)).
C. When the tape folding or tape shrinkage is found on the lower side of guide roller or when there is no spacing found between the lower side flange and the lower edge of the tape, rotate the slant pole assembly to decrease the slant pole angle (in Direction (B)).
D. After the angle alignment adjustment is made, perform the guide roller height adjustment.

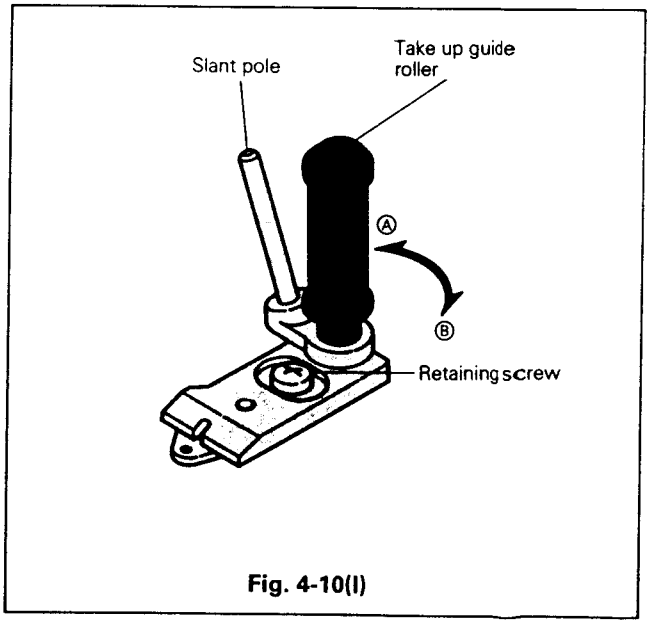


Fig. 4-10(I)

4-11 Interchangeability Adjustment

Before running the alignment tape, check and adjust the tape path by using a recorded tape in accordance with section 4-10.

4-11-1 Check and Adjustment of FM Waveform

A. Connect the oscilloscope to test point TP-2A on the PCB SIGNAL and set to the external synchronization mode.
Synchronize by connecting EXT trigger to TP-2H on the PCB SIGNAL.
B. Run the alignment tape and play back the stairstep waveform.
C. Rotate the tracking control knob so that the FM waveform output will be maximum.

4-11-2 Drum Meeting Point Adjustment

A. Loosen slightly the set screw on supply guide roller.

B. Rotate the supply guide roller so the leading edge (Drum Meeting Point) of FM waveform is flat as A → B, as shown in Fig. 4-11(A).

Note:

- When the guide roller turns too freely, slightly tighten the set screw.
- When adjusting the guide roller, the adjustment should be performed little by little so as not to any damage on the alignment tape. The above operation should be performed with care, checking the FM waveform, and at the sametime, checking drum surface and guide pole surface for any tape sink or tape folding.

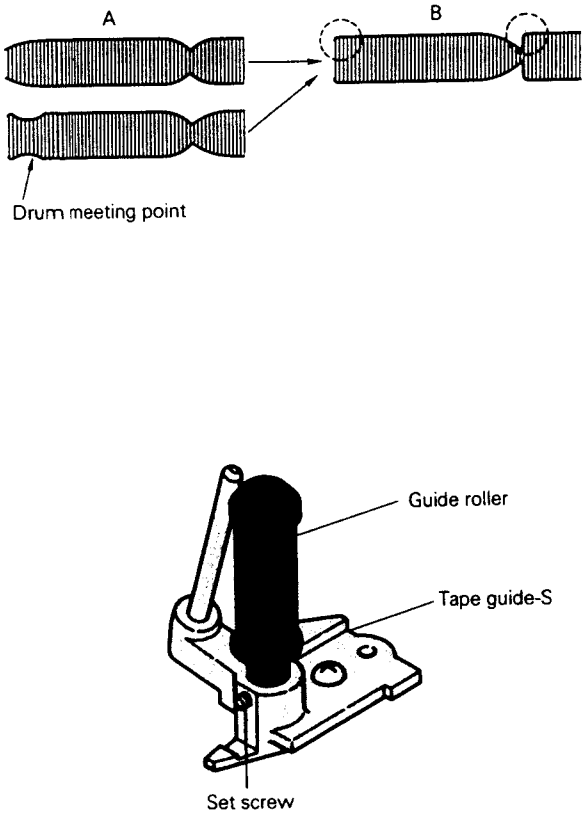


Fig. 4-11(A) Drum Meeting Point Adjustment

4-11-3 Drum Exit Point Adjustment

A. The waveform at the exit point shall be adjusted in the same procedure as given for the drum Meeting Point Loosen slightly the set screw on take up guide roller.

B. Rotate and adjust the take up guide roller so the lagging edge of FM waveform (Drum exit point) is flat as C → D, as shown in Fig. 4-11(B).

C. When the tape is found derailed from the guide, or involved with shrinkage at the take up guide pole part, turn the A/C head adjusting screw C which is shown in Fig. 4-11(B) so the tape travels flush at the lower edge of the guide pole.

Note:

The take up guide pole should not be adjusted.

D. In this case, rotate Audio/control head height adjusting Nut (A), until letting top of the head meets, the tape.

Whether A/C head height shall be raised up or lowered shall be decided on the basis as shown in Fig. 4-11(B).

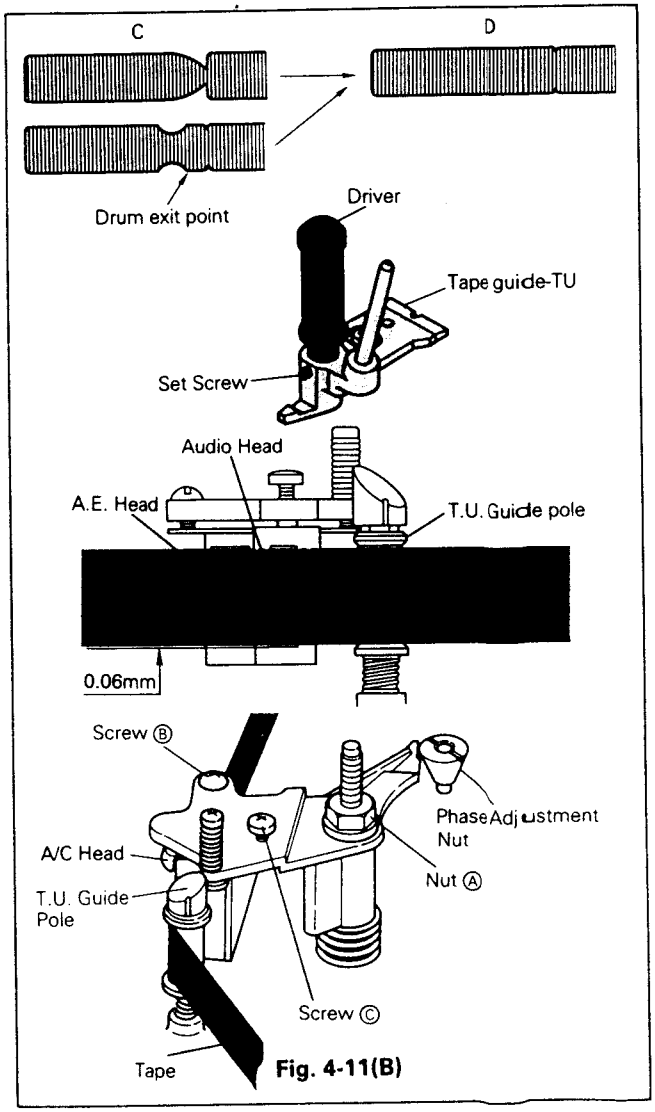


Fig. 4-11(B)

4-11-4 Interchangeability Adjustment

A. Connect the oscilloscope to test point TP-2A (P-B FM OUT) on the PCB SIGNAL. Set to external synchronization and synchronize by connecting EXT trigger to TP-2H on the PCB SIGNAL. Set the EXT trigger to minus (−).
B. Playback the stairstep waveform of the alignment tape.
C. Turn the tracking control knob and adjust the FM waveform output to minimum.
D. If the FM waveform is similar to (A) or (B) in Fig. 4-11(C), adjust the height of the supply guide roller until it becomes like (E), (F) or (G) in Fig. 4-11(D). If the FM waveform fluctuates, adjust to the minimum point of fluctuation.

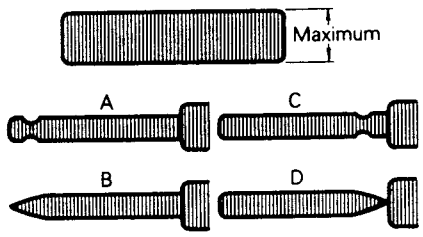


Fig. 4-11(C) Minimum FM Waveform Output

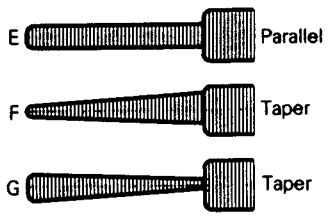


Fig. 4-11(D) Minimum Waveform Output (Standard waveform)

E. If the FM waveform is similar to (C) or (D) in Fig. 4-11(C) adjust the height of the take-up guide roller until it becomes like (E), (F) or (G) in Fig. 4-11(D). If the waveform fluctuates, adjust to the minimum point of fluctuation.
F. Rotate the tracking control knob from maximum to minimum FM waveform output and vice versa, and finely adjust the height of the supply and take-up guide rollers.
G. After ensuring that normal maximum FM waveform output coincides with maximum 6KHz audio output, and that the tape is not creased along the tape path, secure the guide rollers by tightening the set screws.
Note:
Secure in stop mode, and do not apply excessive force to the tape guide.
H. After tightening the set screws, check the interchangeability again.

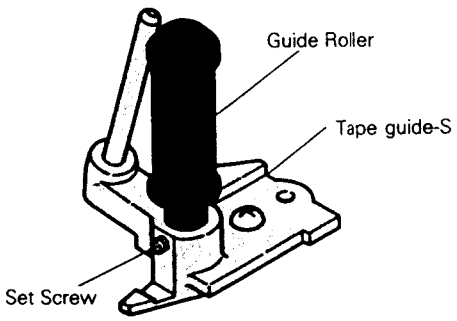


Fig. 4-11(E)

4-11-5 Control Head Phase Control Adjustment

A. Playback the stairstep waveform of the alignment tape.
B. Connect the oscilloscope to test point TP-2A (P.B. FM OUT) on the PCB SIGNAL.
C. Set up in the external trigger mode by connecting TP-2H on the PCB SIGNAL, to the external trigger input.
D. Set the tracking control to the click position.
E. Rotate the phase adjusting nut (CAM SCREW) shown in Fig. 4-11(F) and adjust FM output to maximum.
F. Rotate the tracking knob and be sure that the FM output is maximum at the click position of the tracking knob.

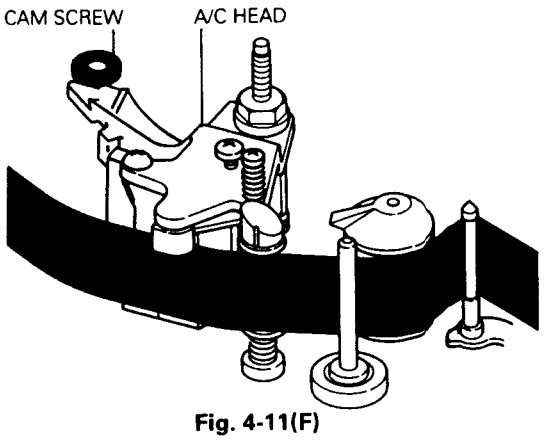


Fig. 4-11(F)

4-11-6 Audio/Control Head Adjustment

When the audio/control head is adjusted, the phase of the control head must also be adjusted.

A. Monitor the audio-out signal with the oscilloscope and playback 6KHz audio signal (stairstep section).

B. Rotate the nut "A" and adjust to obtain maximum audio output level and the dimensions shown in Fig. 4-11(G).

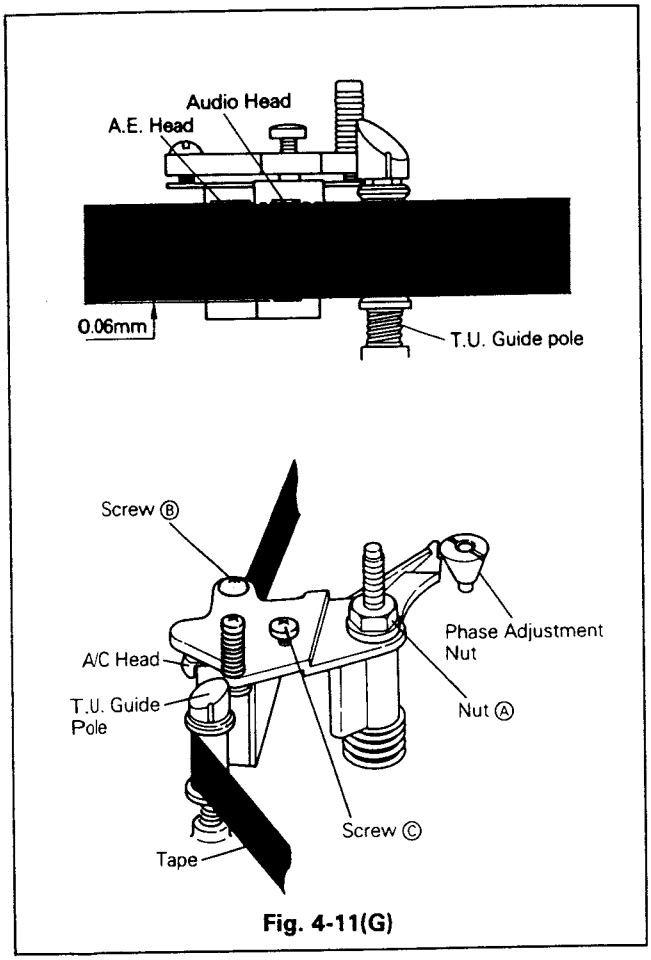


Fig. 4-11(G)

C. Adjust the inclination adjusting screw (C) so that the tape will run along the lower edge of the take-up guide pole without creasing as illustrated in Fig. 4-11(G).

Note:

Adjust so that there are absolutely no creases in the tape at the take-up guide pole because the tensile force of the tape at this part is very large and creasing will significantly shorten the tape service life.

D. Screw (B) is for adjustment of the azimuth. Adjust to 6KHz maximum audio output.

E. Be sure that audio level fluctuation is below 2dB peak-to-peak.

F. If the audio level fluctuation is greater than 2dBp-p. Recheck the alignment given in Item (B). If no improvement is noticed, lower the TU guide pole height slightly within a limit of 0.1 mm. If audio fluctuation is still too great, execute the slant pole angle alignment calibration as given in Item 4-10-4.

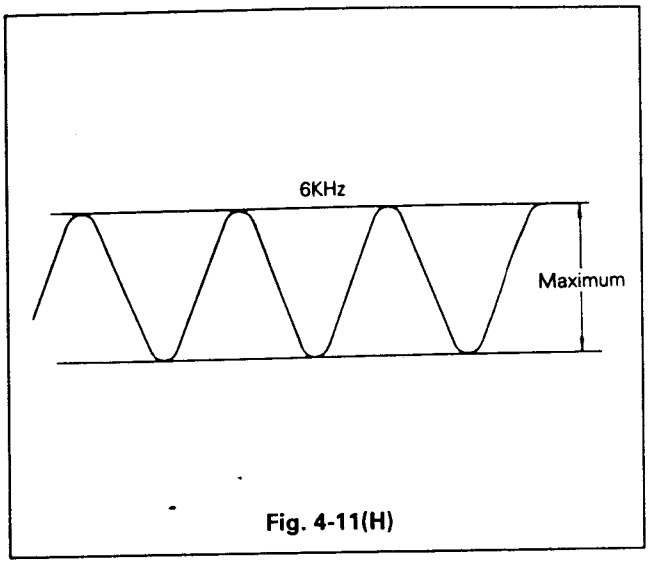


Fig. 4-11(H)

4-11-7 Servo Circuit Adjustment

Following the completion of compatibility adjustments, check the following points.

A. Playback switching point adjustment. (See 3-1-1)

B. Tracking preset adjustment. (3-1-2)

4-11-8 Final Check

A. By using a self-recording and playback tape, record and playback the staircase and make sure that FM waveform from the self-recorded tape is approximately the same as that of the alignment tape reproduction.

B. Adjust the audio playback output level. (See 3-3-1)

C. Check the Y/C signal circuit adjustments. (See 3-2)

KEY TO ABBREVIATIONS

A/C : Audio/Control
ACC : Automatic Colour Control
A.E : Audio Erase
AFC : Automatic Frequency Control
AFT-D : Automatic Fine Tuning Door Switch
AGC : Automatic Gain Control
AL : After Loading
AMP : Amplifier
ANT : Antenna
A-PB : Audio-Playback
A-REC : Audio-Recording
ALC : Automatic Level Control

BPF : Band-Pass Filter
B/W : Black and White
BS : Band SW

CASS : Cassette
CP : Capstan
CP-FG : Capstan-Frequency Generator
CP-F/R : Capstan-Forward/Reverse
CP-M : Capstan-Motor
CONV : Converter
CTL : Control
C-LAMP : Cassette Lamp
C-I LAMP : Cassette Indicator Lamp

DAL : Delay-After Loading
DEMOD : Demodulator
DET : Detector
DL : Delay Line
DL-REV : Delay Reverse
DL-FWD : Delay Forward
DOC : Drop Out Compensator

EF : Emitter Follower
EMPHA : Emphasis
EQ : Equalizer
EE : Electronic-Electronic
ES : End Sensor

FE-H : Full Erase Head
FF : Flip Flop or Fast Forward
FG : Frequency generator
FL-SW : Front Loading SW
FLM : Front Loading Motor
F/R-SW : FF/Rewind Switch

G : Ground

HE-1 : Hall Element-1
HE-2 : Hall Element-2
H-LED : Humidity-LED
H-SENS : Humidity-Sensor
HPF : High-Pass Filter

LIM : Limiter
LPF : Low-Pass Filter
LM : Loading Motor

MDA : Motor Drive Amplifier
MC : Mechanical Control
MIC : Microphone
MOD : Modulator

OPE : Operation
OSC : Oscillator

PB : Play Back
PG : Pulse Generator
P/R-SW : P.B/REC-SW
PCB : Printed Circuit Board
PIC : Picture Control

REC : Recording
REF : Reference
RIS : Record Inhibit Switch
REW : Rewind
REG : Regulator
RS : Reverse Search

SENS : Sensor
SM : Supply Motor
S/P : Still/Pause
SS : Speed Search
STBY : Stand By
S & H : Sample & Hold
SYNC SEP : Sync Separator

TM : Take up Motor
T-REC : Timer-Recording
T.P : Test Point
TR : Transistor
TU-P : Tuner-Power

UL : Unloading

VS : Voltage Synthesizer
V.SYNC : Vertical Sync
VCO : Voltage Controlled Oscillator
VXO : Variable Crystal Oscillator

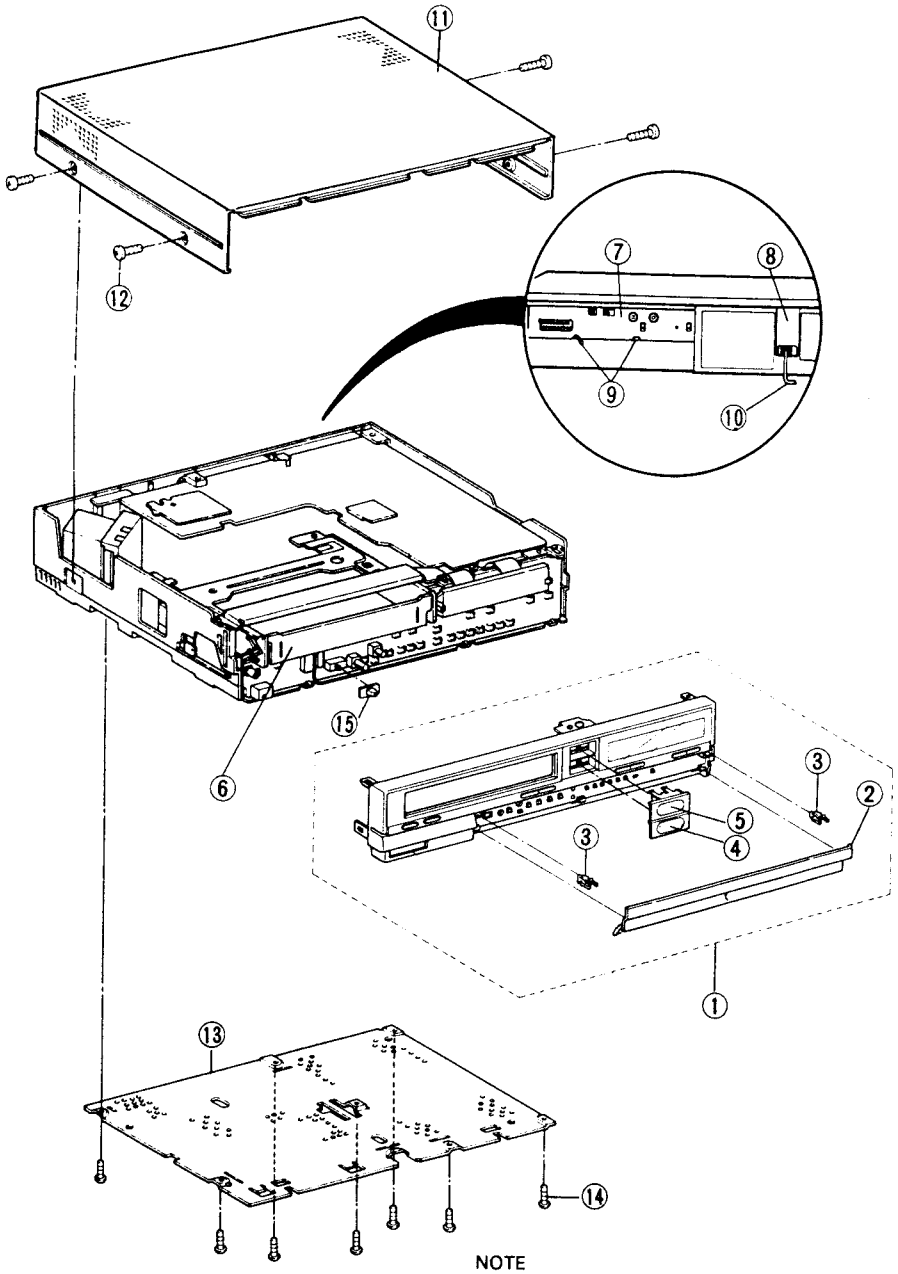
W/D : White/Dark

X'OSC : Crystal Oscillator

Y/C : Luminance/Chrominance

PARTS LIST

1. CABINET ASSEMBLY



NOTE

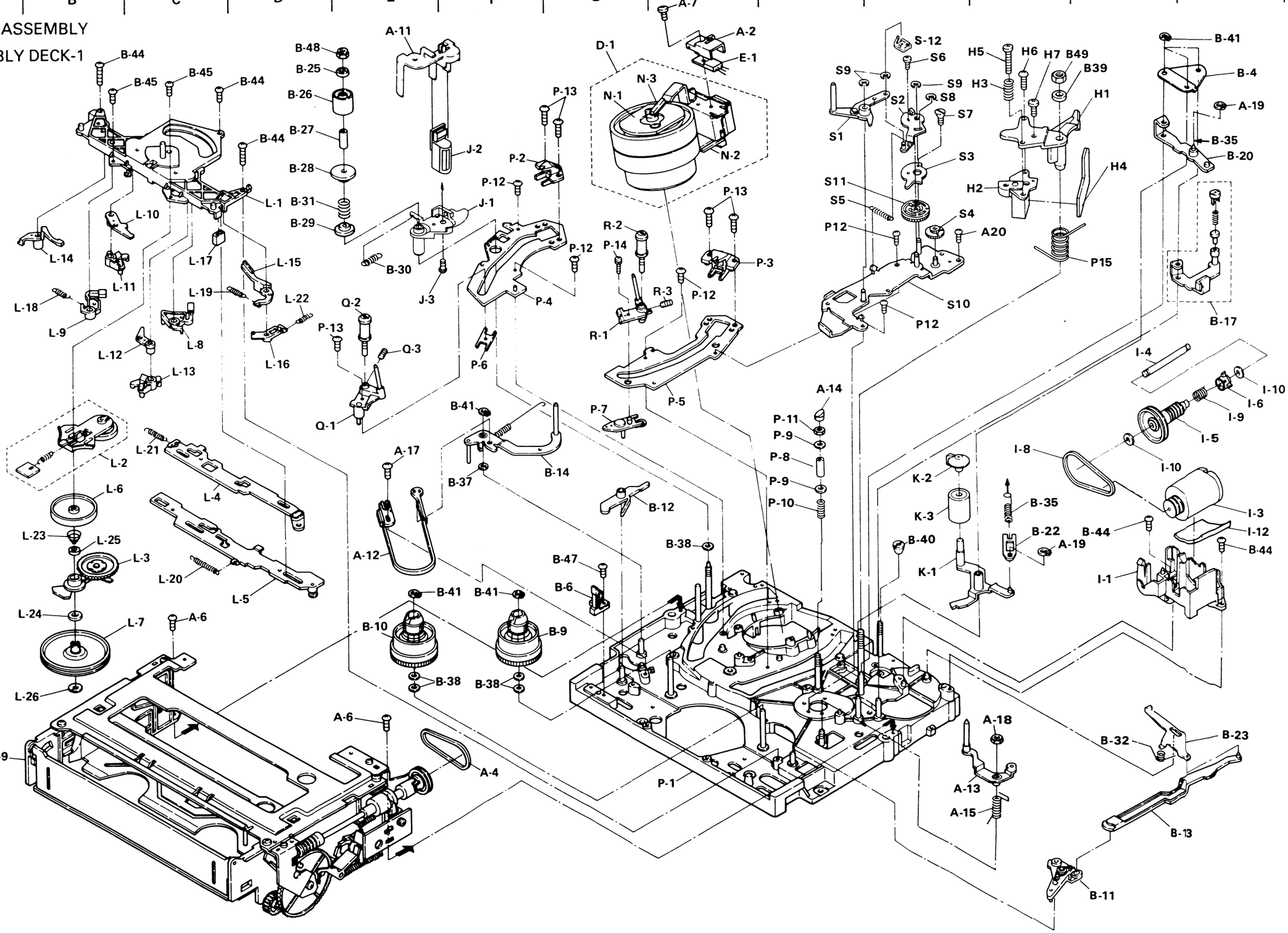
* Broken AC power cord must be exchanged with a new original power cord.

ITEM	PARTS NO.	PARTS NAME	DESCRIPTION
1	G00701B127060	UNIT-FRONT	
2	G00702C658060	DOOR-TIMER	
3	G00621D321010	CATCHER	
4	G00734D349050	BUTTON-STOP	
5	G00734D351050	BUTTON-PLAY	
6	G00702C653070	DOOR-FL	
7	G00761B142020	COVER-ANT	
8	G00761C276030	COVER-POWER	

ITEM	PARTS NO.	PARTS NAME	DESCRIPTION
9	G00669D212010	SCREW-TB-BIND	3×12
10	G00242C879010	AC-POWER-CORD	
11	G00968C013060	TOP-COVER	
12	G00669D223080	SCREW-T-POINT	3×10
13	G00591B289010	PANEL-BOTTOM	
14	G00669D220020	SCREW-TB	3×8
15	G00734D249010	KNOB-SLIDE	

2. DECK ASSEMBLY

ASSEMBLY DECK-1



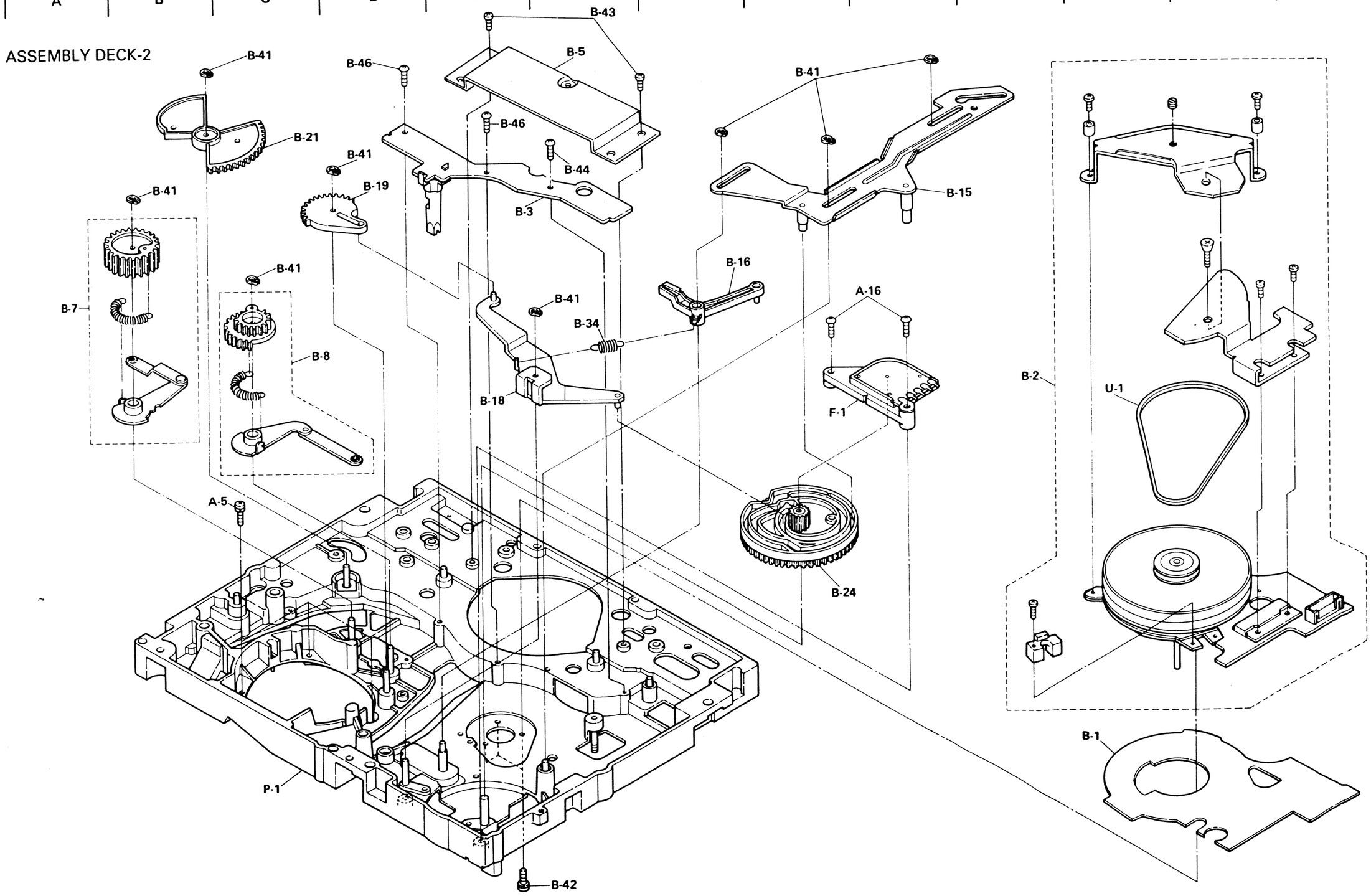
*: Settled Service Parts

ITEM	PARTS NO.	*	ADDRESS		PARTS NAME	DESCRIPTION
A-2	G00224D242010		H-1		BUSH-IC	
A-4	G00521D049010	○	F-8		BELT-LOADING	
A-6	G00669D287030		C-6	E-7	SCREW-TS-WT	M2.6×10
A-7	G00669D200030		H-1		SCREW-SEMS	M2.6×0.45−8
A-9	G00590A189060	○	A-8		UNIT-F/L-E	
A-11	G00641C581010		E-1		CLAMPER-LEAD-FE	
A-12	G00591B271010		E-6		BELT-TENS-BRAKE	
A-13	G00591B268010		J-8		ARM-TU-G	
A-14	G00621D183010		I-5		CAP-TU-G	
A-15	G00572D050010		J-8		SPRING-ARM-TU-G	
A-17	G00669D228010		E-5		SCREW-TS-SEMS	M2.6×6
A-18	G00674D081020		K-8		NUT-NYLON	
A-19	G00685C007010		M-2	K-6	GRIP-RING	
A-20	G00669D227010		J-3		SCREW-TS	M2.6×6
B-4	G00595D606010		M-1		PLATE-E	
B-6	G00439C027010	○	G-6		SW-REC-SAFETY	SW571
B-9	G00522P006030	○	G-7		REEL-DISK	Supply side
B-10	G00522P006040	○	E-7		REEL-DISK	Take-up side
B-11	G00641C522010		L-9		LEVER-C	
B-12	G00621D146010		H-5		LEVER-RS	
B-13	G00641C521010		L-9		LINK-C	
B-14	G00592C320010		G-5		ARM-TENSION	
B-17	G00592C335020		M-4		UNIT-ARM-MAIN	
B-20	G00592C319010		M-2		LEVER-AP	
B-22	G00595D490010		K-6		PLATE-PINCH	
B-23	G00621D154010		M-7		LEVER-TRIG	
B-25	G00631D034010		D-1		COLLAR-IMP	
B-26	G00621D147010		D-2		ROLLER-IMP	
B-27	G00631D091010		D-2		SLEEVE-IMP	
B-28	G00631D028010		D-2		FLANGE-IMP-L	
B-29	G00595D629010		D-3		HOLDER-S-I	
B-30	G00572D040010		E-3		SPRING-ARM-FE	
B-31	G00572D044020		D-3		SPRING-IMP-S	
B-32	G00572D047010		L-8		SPRING-TRIG	
B-35	G00572D043010		K-5		SPRING-PINCH	
B-37	G00552C003040	○	F-5		WASHER-THRUST	φ3.1×φ5.4×t0.5
B-38	G00552C006040	○	H-6	F-7	WASHER-THRUST	φ3 t0.13
B-39	G00595D557010		K-1		WASHER-AC	
B-40	G00631D021010	○	J-6		NUT-TAPER	
B-41	G00685C007010		L-1	F-5	GRIP-RING	(F-6)
B-44	G00669D227010		C-1	D-2	SCREW-TS	M2.6×6 (M-6)
			D-1	L-6		
B-45	G00669D227030		C-1		SCREW-TS	M2.6×10
B-47	G00669D228010		G-6		SCREW-TS-SEMS	M2.6×6
B-48	G00674D081020		D-1		NUT-NYLON	
B-49	G00670P240010		K-1		NUT-HEX	M4×0.7
D-1	G00948B138040	○	G-1		ASSY-DRUM	
E-1	G00260P563050	○	H-1		2SD1776-P, Q	Q971
H-1	G00635B054010	○	K-2		ARM-AC-HL	
H-2	G00460P066010	○	J-3		HEAD-AC	T370
H-3	G00570D593010		J-2		SPRING-AC	
H-4	G00215C206010		L-2		PWB-AC	
H-5	G00650P261060		J-1		SCREW-F-FE-PAN	M2.6×0.45−16
H-6	G00669D227020		K-1		SCREW-TS	M2.6×8
H-7	G00669D206030		K-1		SCREW	M3×0.5−8
I-1	G00641B166010		L-6		HOLDER-DRUM	
I-2	G00592C334010		M-3		HOLDER-WORM	
I-3	G00288P067010	○	M-6		MOTOR-LOADING	M570
I-4	G00631D033010		L-4		SHAFT-H-M	
I-5	G00641C519010		M-5		PULLEY-WORM	
I-6	G00621D138010		M-5		FAN-RING	
I-7	G00641C520010		M-3		WHEEL-GEAR	
I-8	G00521D049010	○	K-5		BELT-LOADING	
I-9	G00572D052010		M-5		SPRING-F-R	
I-10	G00552C004080		M-4	L-5	WASHER-THRUST	φ3 t0.5
I-12	G00622D016010		M-6		CUSHION-M	
J-1	G00641C599010		F-3		ARM-FE-A	
J-2	G00460P055020	○	F-2		HEAD-FE	T371

*: Settled Service Parts

ITEM	PARTS NO.	*	ADDRESS		PARTS NAME	DESCRIPTION
J-3	G00669D285010		E-3		SCREW-TB-PAN	M2×6
K-1	G00591B269010		J-6		ARM-PINCH	
K-2	G00621D153010		J-5		CAP-ROLLER	
K-3	G00522C055030	○	J-6		PINCH-ROLLER	
L-1	G00641B167010		D-3		BASE-REEL-DRIVE	
L-2	G00522B017010	○	B-5		UNIT-GUM-IDLER	
L-3	G00522B020020	○	C-6		UNIT-GEAR-IDLER	
L-4	G00641C523010		C-5		PLATE-CAM-C	
L-5	G00641C524010		D-6		PLATE-CAM-B	
L-6	G00641C636010		B-5		PULLEY-IDLER	
L-7	G00641C526010		C-7		PULLEY-BELT	
L-8	G00641C528010		C-4		BRAKE-MAIN-TU	
L-9	G00641C529010		B-4		BRAKE-MAIN-S	
L-10	G00621D139010		C-3		LEVER-S1	
L-11	G00621D140010		B-3		LEVER-S2	
L-12	G00621D141010		B-4		LEVER-TU1	
L-13	G00621D142010		C-4		LEVER-TU2	
L-14	G00621D143010		B-3		BRAKE-SUB-S	
L-15	G00621D144010		D-3		BRAKE-SUB-TU	
L-16	G00621D145010		D-4		BRAKE-SUB-RS	
L-17	G00622D004010		C-3		CUSHION	
L-18	G00572D035010		B-3		SPRING-S	
L-19	G00572D036010		C-3		SPRING-TU	
L-20	G00572D037010		C-6		SPRING-CAM-B	
L-21	G00572D038010		C-5		SPRING-CAM-C	
L-22	G00572D039010		D-3		SPRING-RS	
L-23	G00572D101010		B-6		SPRING-ID	
L-24	G00552C010020		B-6		WASHER-THRUST	φ6.7×φ15×t0.13
L-25	G00552C010030		B-6		WASHER-THRUST	φ6.7×φ10.7×t0.5
L-26	G00552C007030	○	B-7		CUT-WASHER	φ2.5×t0.5
N-1	G00928B371070	○	G-2		ASSY-UPPER-DRUM	
N-2	G00288P069080	○	H-2		MOTOR-DRUM	
N-3	G00299C013010	○	G-1		BRUSH	
P-1	G00948A027020		H-8		ASSY-MAIN-PLATE	
P-2	G00635B046010	○	F-2		ARM-STOPPER-S	
P-3	G00635B047010	○	I-3		ARM-STOPPER-T	
P-4	G00591B266010		F-4		PLATE-GUIDE-S	
P-5	G00591B277010		H-4		PLATE-GUIDE-T-A	
P-6	G00595D500010		F-4		SLIDER	
P-7	G00595D528010		G-5		SLIDER-ADJUST	
P-8	G00631D031010		I-5		GUIDE-POLE	
P-9	G00631D092010		I-5		FLANGE-G-P	
P-10	G00572D045010		I-6		SPRING-G-P	
P-11	G00670P230010		I-5		NUT-HEX	M3×0.5
P-12	G00669D227010		F-2	G-3	SCREW-TS	M2.6×6 (J-4)
			H-3	I-3		
P-13	G00669D227020		D-4	G-2	SCREW-TS	M2.6×8
			H-3			
P-14	G00669D283010		G-3		SCREW-BIND-SEMS	M2.6×0.45−8
P-15	G00572D162010		K-3		SPRING-AC-2	
Q-1	G00635B049010	○	D-5		TAPE-GUIDE-S-2	
Q-2	G00522B016020	○	E-4		GUIDE-ROLLER	SUPPLY
Q-3	G00669D197020		E-4		SET-SCREW-F	M3×0.5−4
R-1	G00635B048010	○	G-4		TAPE-GUIDE-T	
R-2	G00522B016020	○	G-3		GUIDE-ROLLER	TAKE-UP
R-3	G00669D197020		H-3		SET-SCREW-F	M3×0.5−4
S-1	G00592C476010		I-2		LEVER-HL	
S-2	G00592C495010		J-2		PLATE-HL-1	
S-3	G00592C496010		J-2		PLATE-HL-2	
S-4	G00621D297010		J-3		GEAR-HL	
S-5	G00572D161010		I-3		SPRING-HL	
S-6	G00669D204090		J-1		SCREW-SEMS-W	M2.6×6−0.45
S-7	G00635D057010		J-2		PIN-TAPER	
S-8	G00685C002030		J-2		RETAINING-RING-E	1.5
S-9	G00685C002040	○	I-1	J-2	RETAINING-RING-E	2.0
S-10	G00591B371020		J-4		BASE-HL	
S-11	G00641C658010		I-2		CAM-HL2	
S-12	G00621D345010		J-1		MOLD-SPRING-HL2	

ASSEMBLY DECK-2

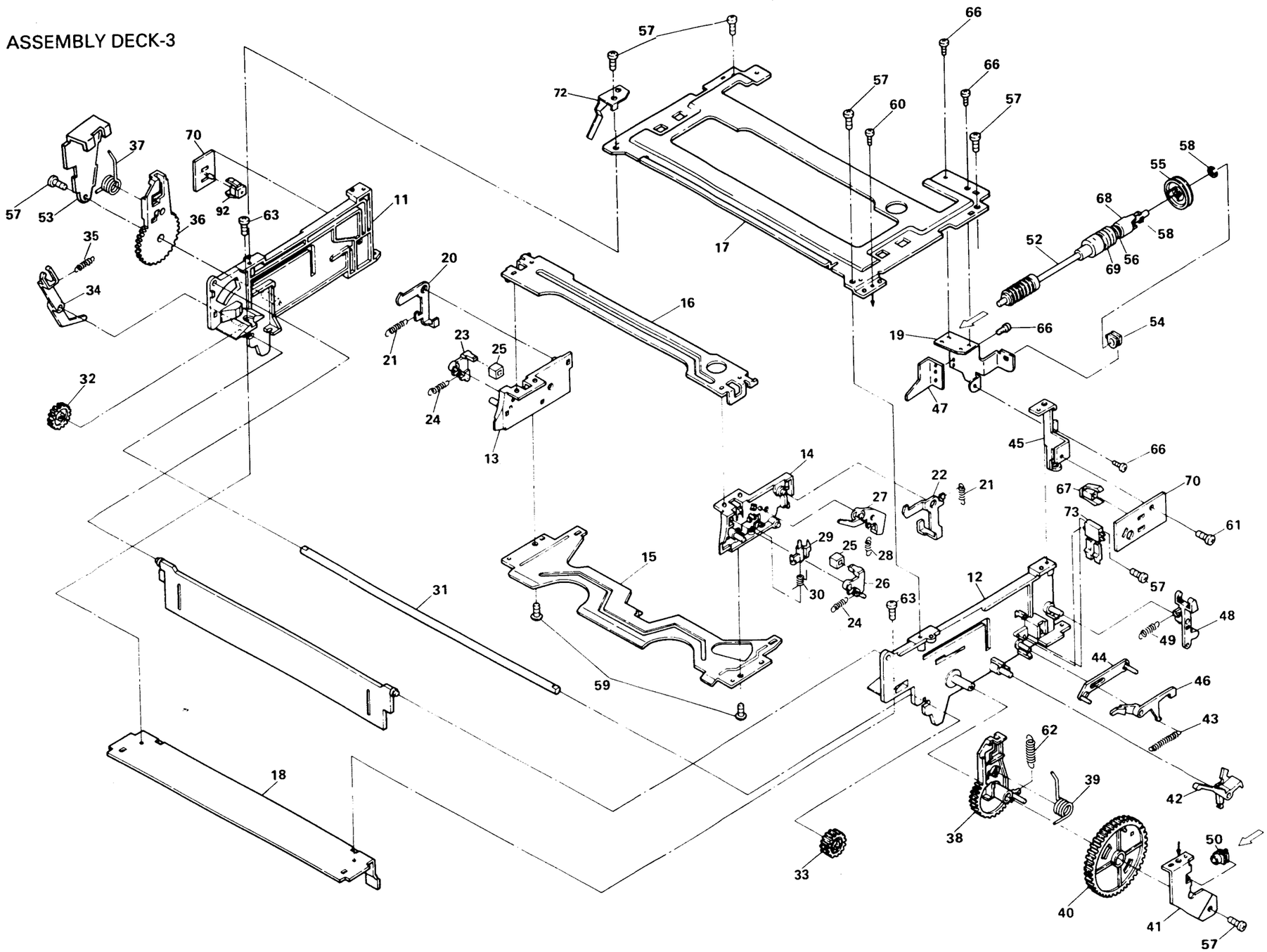


*: Settled Service Parts

ITEM	PARTS NO.	*	ADDRESS		PARTS NAME	DESCRIPTION
A-5	G00669D200040		C-5		SCREW-SEMS	M2.6×0.45−10
A-16	G00669D227030		I-3		SCREW-TS	M2.6×10
B-1	G00640D545010		K-8		INSULATOR-CP	
B-2	G00288P070030	○	J-4		MOTOR-CP	M470
B-3	G00928C306010		E-3		ASSY-PWB-REEL-SENS	
B-5	G00595D558010		F-1		STOPPER-RD	
B-7	G00591B264010		A-4		ARM-LOAD-S	
B-8	G00591B265010		C-4		ARM-LOAD-T	
B-15	G00591B278020		I-3		LINK-B	
B-16	G00641C532010		G-3		BRAKE-CP	
B-18	G00591B270010		E-4		ARM-LOAD	
B-19	G00641C531010	○	D-2		GEAR-T-L	
B-21	G00641C527010	○	C-2		CAM-TENS	
B-24	G00641B227010		H-6		CAM-GEAR-M3	
B-34	G00572D041010		F-4		SPRING-B-CP	
B-41	G00685C007010		B-2	C-1	GRIP-RING	(F-3, H-1)
			C-3	D-2		
B-42	G00669D200020		F-9		SCREW-SEMS	M2.6×0.45−6
B-43	G00669D227090		F-1		SCREW-TS	M2.6×4
B-44	G00669D227010		F-2		SCREW-TS	M2.6×6
B-46	G00669D287020		D-1	E-2	SCREW-TS-WT	M2.6×8
F-1	G00439P011040	○	H-5		SW-MODE-SELECT-A	SW570
P-1	G00948A027020		C-8		ASSY-MAIN-PLATE	
U-1	G00521D053010	○	K-4		BELT-R	

A B C D E F G H I J K L

ASSEMBLY DECK-3



*: Settled Service Parts

ITEM	PARTS NO.	*	ADDRESS		PARTS NAME	DESCRIPTION
11	G00641A066010		D-2		HOLDER-SIDE-SP	
12	G00641A067010		J-6		HOLDER-SIDE-TU	
13	G00641B175010		E-5		HOUSING-CASSETTE-SP	
14	G00641B176010		H-5		HOUSING-CASSETTE-TU	
15	G00592C337010		G-6		PLATE-BOTTOM	
16	G00592C336010		G-3		PLATE-UPPER	
17	G00591B274010		G-3		PLATE-ROOF	
18	G00592C338010		C-7		GUIDE-INSERT	
19	G00592C445010		I-4		HOLDER-PULLEY-K	
20	G00595D519010		E-3		PLATE-LOCK-SP	
21	G00572D061010		D-4	J-5	SPRING-L-LOCK-A	
22	G00595D520010		I-5		PLATE-LOCK-TU	
23	G00621D157020		E-3		HOLDER-CASSETTE	
24	G00572D059010		E-4	I-6	SPRING-HOLDER-CAS-F/L	
25	G00642D494010		E-4	I-5	RUBBER-F/L	
26	G00621D157010		I-6		HOLDER-CASSETTE	
27	G00641C540010		I-5		OPENER-LID-CAS	
28	G00572D060010		I-6		SPRING-OPENER-LID	
29	G00621D161010	○	H-5		JUT	
30	G00572D062010		H-6		SPRING-JUT-F/L	
31	G00631D046010		E-6		SHAFT-FL	
32	G00621D174010	○	A-4		GEAR-FL-S	
33	G00621D173010	○	H-8		GEAR-FL-T	
34	G00641C549010	○	A-3		ARM-FL-DOOR	
35	G00572D068010		A-2		SPRING-FL-DOOR	
36	G00641C548010	○	B-2		ARM-FL-SP	
37	G00572D080010		B-2		SPRING-FL-S	
38	G00641C542010	○	J-8		ARM-FL-TU2	
39	G00572D064010		K-8		SPRING-FL-T	
40	G00641C543010	○	K-9		GEAR-DRIVE-FL2	
41	G00592C339010		K-9		STAY-HOLDER-TU	
42	G00641C544010		L-8		LEVER-SW	
43	G00572D066010		L-7		SPRING-LEVER-SW	
44	G00621D158010		K-7		SLIDER-LEVER-SW	
45	G00592C371010		J-5		HOLDER-PWB	
46	G00641C547010		L-7		LEVER-LOCK	
47	G00595D679010		I-4		GUIDE-DOOR	
48	G00641C546010		L-6		LEVER-CLUTCH-FL	
49	G00572D065030		L-6		SPRING-LEVER-CLUTCH	
50	G00621D159010		L-8		HOLDER-SHAFT-FL	
52	G00641C545010	○	J-3		SHAFT-WORM	
53	G00592C429010		A-2		STAY-HOLDER-SP	
54	G00621D270010		L-3		HOLDER-SHAFT-P	
55	G00621D160010	○	L-2		PULLEY-FL	
56	G00572D100010		K-3		SPRING-FL-C	
57	(57)		G-1	I-1	SCREW-TB	M2.6×8
58	G00685C002040	○	L-2	L-3	RETAINING-RING	
59	(59)		F-7		SCREW-TB	M2.6×6
60	G00650P260040		I-1		SCREW	M2.6×4
61	(61)		L-5		SCREW	M2.6×6
62	G00572D063010		J-7		SPRING-FL-ARM	
63	(63)		C-2	I-6	SCREW-TB	M2.6×5
66	(66)		J-1	J-4	SCREW-TB	M3×5
67	G00268P040010	○	K-5		PHOTO-TRANSISTOR	Q573
68	G00621D220010	○	K-2		CLUTCH-A	
69	G00621D221010		K-3		CLUTCH-B	
70	G00215C219010		B-1	L-5	PWB-S-E-2	
72	G00572D178010		F-1		SPRING-DAMPER	
73	G00439C021010	○	K-5		SW-FL	SW572
92	G00268P040020	○	C-2		PHOTO-TRANSISTOR	Q572

3. ELECTRICAL PARTS

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
	— Y. SIGNAL SECTION —		[983C05108D]
IC201	G00266P650010	INTEGRATED CIRCUIT	M51478SP
IC2A1	G00267P824080	INTEGRATED CIRCUIT	M51475G-7/ M514756-7A
IC2A2	G00266P948010	INTEGRATED CIRCUIT	MN3106
IC2A3	G00272P018010	INTEGRATED CIRCUIT	MN3802
Q201	G00260P419040	TRANSISTOR	2SC2724-C, D
Q202	G00260P419040	TRANSISTOR	2SC2724-C, D
Q2A0	G00260P419040	TRANSISTOR	2SC2724-C, D
Q2A1	G00260P544010	TRANSISTOR	JA101-P, Q
Q2A3	G00260P544010	TRANSISTOR	JA101-P, Q
Q2A4	G00260P543010	TRANSISTOR	JC501-P, Q
Q2A5	G00260P419040	TRANSISTOR	2SC2724-C, D
Q2A6	G00260P255040	TRANSISTOR	2SA950-Y
Q2A8	G00260P338050	TRANSISTOR	2SC2603-G
Q2A9	G00260P256010	TRANSISTOR	2SA1115-E, F
Q2B0	G00260P562010	TRANSISTOR	2SA952
Q2B4	G00260P543010	TRANSISTOR	JC501-P, Q
Q2B5	G00260P419040	TRANSISTOR	2SC2724-C, D
Q2B6	G00260P419040	TRANSISTOR	2SC2724-C, D
Q2B7	G00260P544010	TRANSISTOR	JA101-P, Q
Q2D1	G00260P603010	DIGITAL TRANSISTOR	DTA124ES/UN4112
Q2D2	G00260P543010	TRANSISTOR	JC501-P, Q
Q2D3	G00260P544010	TRANSISTOR	JA101-P, Q
D2A1	G00264P370010	DIODE	1N4148
D2A3	G00264P370010	DIODE	1N4148
D2A4	G00264P370010	DIODE	1N4148
LPF2A0	G00409P177010	LOW PASS FILTER	
LPF2A1	G00409P323010	LOW PASS FILTER	ZLB-5L2291
L201	G00325C106060	PEAKING COIL	18μH±5%
L202	G00325C122050	PEAKING COIL	100μH±10%
L203	G00325C107060	PEAKING COIL	120μH±5%
L204	G00325C107020	PEAKING COIL	56μH±5%
L205	G00325C122050	PEAKING COIL	100μH±10%
L208	G00325C120060	PEAKING COIL	2.7μH±20%
L209	G00325C107050	PEAKING COIL	100μH±5%
L2A0	G00325C102050	PEAKING COIL	100μH±10%
L2A2	G00325C107010	PEAKING COIL	47μH±5%
L2A3	G00325C121050	PEAKING COIL	15μH±10%
L2A4	G00325C107050	PEAKING COIL	100μH±5%
L2A5	G00325C107040	PEAKING COIL	82μH±5%
L2A6	G00325C106070	PEAKING COIL	22μH±5%
L2A7	G00325C107050	PEAKING COIL	100μH±5%
L2A8	G00325C106070	PEAKING COIL	22μH ±5%
L2B0	G00325C112060	PEAKING COIL	120μH±10%
L2B1	G00325C122050	PEAKING COIL	100μH±10%
L2B2	G00325C122050	PEAKING COIL	100μH±10%
L2B3	G00325C102050	PEAKING COIL	100μH±10%
L2B4	G00325C112070	PEAKING COIL	150μH±10%
L2B6	G00325C102050	PEAKING COIL	100μH±10%
VR2A0	G00127C060050	VR-SEMIFIXED	0.1W 2KΩ±30% FM REC LEVEL ADJ
VR2A2	G00127C060070	VR-SEMIFIXED	0.1W 5KΩ±30% NOISE CANCEL ADJ
VR2A3	G00127C060090	VR-SEMIFIXED	0.1W 20KΩ±30% CCD BIAD ADJ
J271	G00451C058020	CONNECTOR	21 Pin
	— C. SIGNAL SECTION —		[983C05204B]
IC6A0	G00266P946010	INTEGRATED CIRCUIT	M51477SP
Q6A8	G00260P543020	TRANSISTOR	JC501-Q-R
Q6A9	G00260P604010	DIGITAL TRANSISTOR	DTC124ES/UN4212
Q6B1	G00260P544010	TRANSISTOR	JA101-P, Q
Q6B3	G00260P604010	DIGITAL TRANSISTOR	DTC124ES/UN4212
D6A3	G00264P370010	DIODE	1N4148
D6A4	G00264P370010	DIODE	1N4148
D6A5	G00264P370010	DIODE	1N4148
D6A7	G00264P370010	DIODE	1N4148
BPF6A0	G00409P284010	BAND PASS FILTER	ZLB-5E1695
CF6A0	G00296P021010	CERAMIC FILTER	SFF-5.06MB
LPF6A0	G00409P217010	LOW PASS FILTER	
DL6A0	G00337P081010	DELAY LINE	
L6A1	G00325C106020	PEAKING COIL	8.2μH±5%
L6A2	G00325C122050	PEAKING COIL	100μH±10%
L6A3	G00325C122050	PEAKING COIL	100μH±10%
L6A6	G00321C011050	RF COIL	8200μH±5%
L6A7	G00325C112080	PEAKING COIL	180μH±10%
L6A8	G00325C107000	PEAKING COIL	39μH±5%
L6B2	G00325C107020	PEAKING COIL	56μH±5%
VR6A0	G00127C060020	VR-SEMIFIXED	0.1W B300Ω±30% REC COLOUR LEVEL ADJ
VR6A1	G00127C061010	VR-SEMIFIXED	0.1W 50KΩ±30% CARRIER LEAK ADJ
VR6A2	G00127C060050	VR-SEMIFIXED	0.1W 2KΩ±30% AFC ADJ
VC6A0	G00202P109050	TRIMMER CAPACITOR	9.8pF-60pF X OSC ADJ
X6A0	G00285P049010	CRYSTAL RESONATOR	4.43361 9MHz

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
S6A1	G00431C065010	SLIDE SWITCH	INPUT SELECT
— AUDIO SECTION —			[983C05303C]
IC3A0	G00272P063010	INTEGRATED CIRCUIT	LA7096
Q3A0	G00260P313030	TRANSISTOR	2SC1214-C
L3A1	G00321C011050	RF COIL	8200μH±5%
L3A2	G00321C010040	RF COIL	1000μH±5%
L3A3	G00321C011050	RF COIL	8200μH±5%
T3A0	G00409P351010	AUDIO BIAS OSC COIL	
VR3A0	G00127C081020	VR-SEMIFIXED	0.2W B100KΩ±20% AUDIO BIAS LEVEL ADJ
VR3A1	G00127C080080	VR-SEMIFIXED	0.2W B10KΩ±20% AUDIO PB LEVEL ADJ
— TUNER SECTION —			[982C89508G]
IC101	G00266P121010	INTEGRATED CIRCUIT	LA7520
Q01	G00260P256010	TRANSISTOR	2SA1115-E, F
Q02	G00260P338050	TRANSISTOR	2SC2603-G
Q03	G00260P543020	TRANSISTOR	JC501-Q-R
Q04	G00260P543020	TRANSISTOR	JC501-Q-R
Q150	G00260P543020	TRANSISTOR	JC501-Q-R
Q151	G00260P338050	TRANSISTOR	2SC2603-G
Q152	G00260P604010	DIGITAL TRANSISTOR	DTC124ES/UN4212
Q320	G00260P338050	TRANSISTOR	2SC2603-G
Q321	G00260P338050	TRANSISTOR	2SC2603-G
Q322	G00260P338050	TRANSISTOR	2SC2603-G
D151	G00264P370010	DIODE	1N4148
D157	G00264P370010	DIODE	1N4148
CF101	G00296P076010	CERAMIC FILTER	EFC-S5M7MW3A
CF301	G00299P058020	CERAMIC DISCRIMINATOR	CDA5.5MC24B
CF302	G00296P014090	CERAMIC FILTER	5.5MHz
SF101	G00296P034050	SAW FILTER	KAF-38.9MR-MN-1
L01	G00325C122050	PEAKING COIL	100μH±10%
L07	G00325C124030	PEAKING COIL	0.22μH±20%
L08	G00321C041050	RF COIL	
L101	G00325C124050	PEAKING COIL	0.33μH±20%
L102	G00323P154020	VIF COIL	LLD-TANK (38.5MHz)
L103	G00323P158010	VIF COIL	AFT (36.875 38.9 39.5MHz)
L104	G00320P044020	TRAP COIL	33.4MHz
L106	G00325C166020	PEAKING COIL	8.2MH±5%
T101	G00323P164020	VIF TRANSFORMER	38MHz

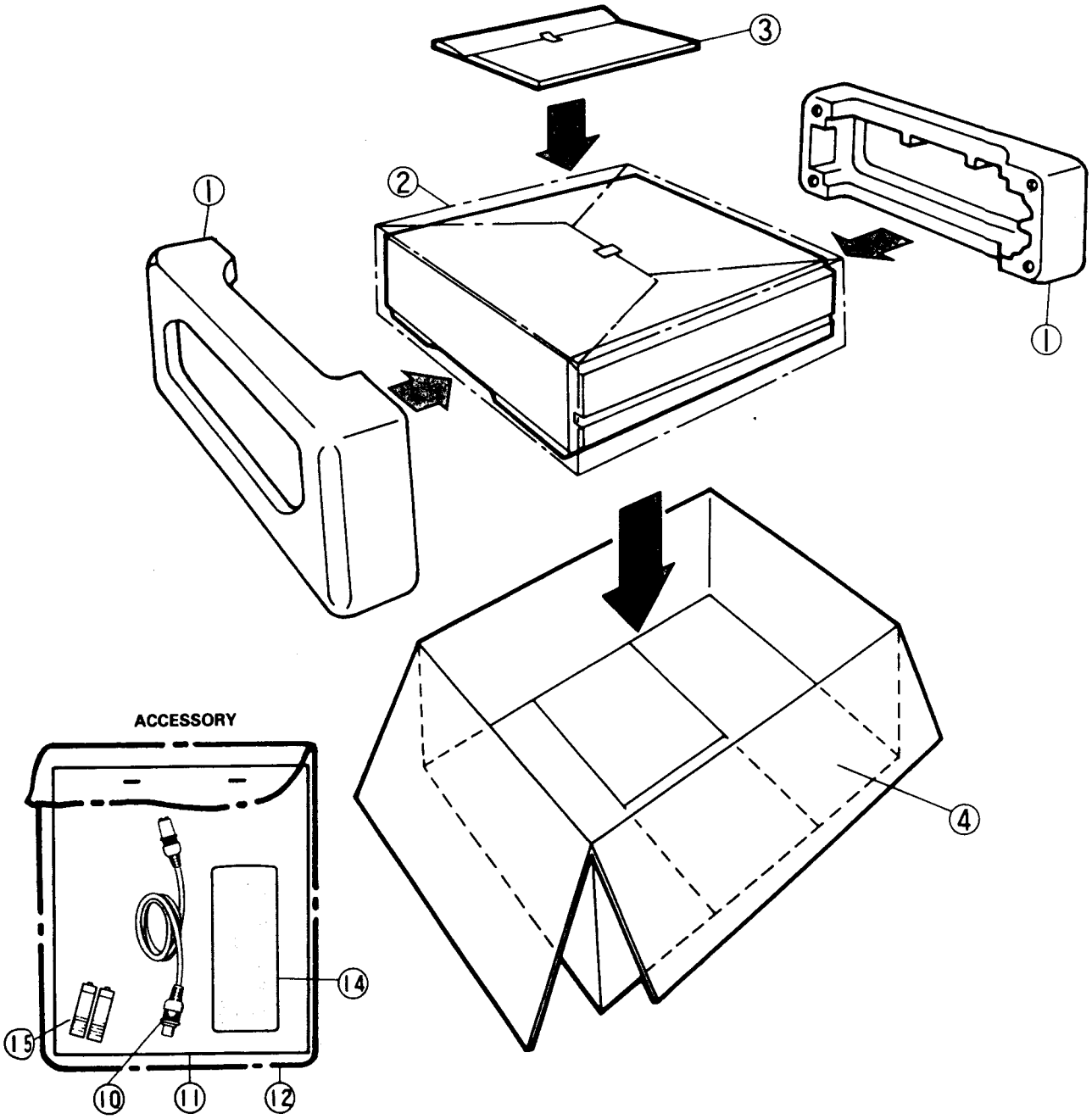
SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
VR101	G00127C060080	VR-SEMIFIXED	0.1W 10KΩ±30%
TU01	G00295P240010	TUNER	ENV57454F2
CU01	G00295P170080	RF CONVERTER	ENC-87879
— SERVO SECTION —			[983C05502D]
IC4A0	G00263P887060	INTEGRATED CIRCUIT	MN67451MKH
IC4A1	G00266P419010	INTEGRATED CIRCUIT	M5223P
IC4A2	G00266P415010	INTEGRATED CIRCUIT	BA6411
IC4A3	G00266P419010	INTEGRATED CIRCUIT	M5223P
IC4A4	G00266P419010	INTEGRATED CIRCUIT	M5223P
Q4A0	G00260P256010	TRANSISTOR	2SA1115-E, F
Q4A1	G00260P544010	TRANSISTOR	JA101-P, Q
Q4A2	G00260P543010	TRANSISTOR	JC501-P, Q
Q4A3	G00260P544010	TRANSISTOR	JA101-P, Q
Q4A4	G00260P544010	TRANSISTOR	JA101-P, Q
Q4A5	G00260P603010	DIGITAL TRANSISTOR	DTA124ES/UN4112
Q4A7	G00260P604010	DIGITAL TRANSISTOR	DTC124ES/UN4212
Q4A8	G00260P543010	TRANSISTOR	JC501-P, Q
Q4B0	G00260P338030	TRANSISTOR	2SC2603-F
Q4B1	G00260P256040	TRANSISTOR	2SA1115-F
Q4B2	G00260P256040	TRANSISTOR	2SA1115-F
Q4B3	G00260P544010	TRANSISTOR	JA101-P, Q
Q4B4	G00260P544010	TRANSISTOR	JA101-P, Q
Q4B6	G00260P604010	DIGITAL TRANSISTOR	DTC124ES/UN4212
D4A0	G00264P370010	DIODE	1N4148
D4A1	G00264P370010	DIODE	1N4148
D4A3	G00264P370010	DIODE	1N4148
D4A4	G00264P370010	DIODE	1N4148
VR4A0	G00127C071020	VR-SEMIFIXED	0.1W B100KΩ±30% PB SWPOINT ADJ
VR4A1	G00127C031020	VR-SEMIFIXED	0.2W B100KΩ±25% TRACKING PRESET ADJ
— M.C. SECTION —			[983C05404A]
IC5A0	G00263P727010	INTEGRATED CIRCUIT	M50786-611SP
IC5A1	G00263P077020	INTEGRATED CIRCUIT	TC4078BP
IC5A2	G00266P028010	INTEGRATED CIRCUIT	TA7268BP
IC5S0	G00272P031010	INTEGRATED CIRCUIT	M50740-645P
Q5A0	G00260P543010	TRANSISTOR	JC501P, Q

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
Q5A1	G00260P543010	TRANSISTOR	JC501-P, Q
Q5A3	G00260P543010	TRANSISTOR	JC501-P, Q
Q5A4	G00260P544010	TRANSISTOR	JA101-P, Q
Q5A5	G00260P603010	DIGITAL TRANSISTOR	DTA124ES/UN4112
Q5A6	G00260P543010	TRANSISTOR	JC501-P, Q
Q5A7	G00260P544010	TRANSISTOR	JA101-P, Q
Q5A8	G00260P544010	TRANSISTOR	JA101-P, Q
Q5A9	G00260P544010	TRANSISTOR	JA101-P, Q
Q5B0	G00260P543010	TRANSISTOR	JC501-P, Q
Q5B1	G00260P544010	TRANSISTOR	JA101-P, Q
Q5S0	G00260P543010	TRANSISTOR	JC501-P, Q
Q5S1	G00260P544010	TRANSISTOR	JA101-P, Q
Q5S2	G00260P543010	TRANSISTOR	JC501-P, Q
Q5S3	G00260P543010	TRANSISTOR	JC501-P, Q
Q5S4	G00260P603010	DIGITAL TRANSISTOR	DTA124ES/UN4112
D5A0	G00264P370010	DIODE	1N4148
D5A1	G00264P501040	ZENER DIODE	HZ3ALL (3V ZENER)
D5A2	G00264P370010	DIODE	1N4148
D5A3	G00264P342070	ZENER DIODE	HZ4C2 (4V ZENER)
D5A4	G00264P370010	DIODE	1N4148
D5A5	G00264P370010	DIODE	1N4148
CF5A0	G00299P102010	CERAMIC RESONATOR	EFO-FC4004A4
CF5S0	G00299P036010	CERAMIC RESONATOR	KBR-400B
— POWER SECTION —			[983C05604C]
IC9A0	G00266P010010	INTEGRATED CIRCUIT	μPC574J, K, L
Q9A0	G00260P543010	TRANSISTOR	JC501-P, Q
Q9A2	G00260P563050	TRANSISTOR	2SD1776-P, Q
Q9A3	G00260P591010	TRANSISTOR	2SC3852
Q9A4	G00260P586060	TRANSISTOR	2SB892-S, T, U
Q9A5	G00260P544010	TRANSISTOR	JA101-P, Q
Q9A6	G00260P543010	TRANSISTOR	JC501-P, Q
Q9A7	G00260P543010	TRANSISTOR	JC501-P, Q
Q9A8	G00260P591010	TRANSISTOR	2SC3852
Q9A9	G00260P603010	DIGITAL TRANSISTOR	DTA124ES/UN4112
D9A0	G00264P500020	DIODE	EM01Z
D9A1	G00264P500020	DIODE	EM01Z
D9A2	G00264P500020	DIODE	EM01Z
D9A3	G00264P500020	DIODE	EM01Z
D9A4	G00264P500020	DIODE	EM01Z
D9A5	G00264P500020	DIODE	EM01Z
D9A6	G00264P370010	DIODE	1N4148
D9A7	G00264P370010	DIODE	1N4148
D9A8	G00264P104040	ZENER DIODE	HZ30-2 (30V ZENER)
D9A9	G00264P342040	ZENER DIODE	HZ12A3 (12V ZENER)

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
D9B0	G00264P342090	ZENER DIODE	HZ6B1-L (6V ZENER)
D9B1	G00264P342070	ZENER DIODE	HZ4C2 (4V ZENER)
D9B2	G00264P370010	DIODE	1N4148
— TIMER/OPE SECTION —			[983C05709F]
IC8A0	G00263P728020	INTEGRATED CIRCUIT	μPD75208G-522-1B
IC8A1	G00263P848010	INTEGRATED CIRCUIT	M58659P
D801	G00264P313050	DIODE-LE	SLR-34URC3
D8A0	G00264P520010	ZENER DIODE	ZPD9V1 (9V ZENER)
D8A1	G00264P341070	ZENER DIODE	HZ6C2 (6V ZENER)
D8A2	G00264P370010	DIODE	1N4148
D8A3	G00264P370010	DIODE	1N4148
D8A4	G00264P370010	DIODE	1N4148
D8A5	G00264P370010	DIODE	1N4148
D8A6	G00264P370010	DIODE	1N4148
D8A7	G00264P370010	DIODE	1N4148
D8A8	G00264P370010	DIODE	1N4148
D8A9	G00264P370010	DIODE	1N4148
D8B0	G00264P370010	DIODE	1N4148
D8B1	G00264P370010	DIODE	1N4148
D8B2	G00264P370010	DIODE	1N4148
D8B3	G00264P370010	DIODE	1N4148
D8B4	G00264P370010	DIODE	1N4148
D8B6	G00264P370010	DIODE	1N4148
D8B8	G00264P370010	DIODE	1N4148
D8B9	G00264P370010	DIODE	1N4148
D8C0	G00264P370010	DIODE	1N4148
D8C1	G00264P370010	DIODE	1N4148
D8C2	G00264P370010	DIODE	1N4148
VR280	G00129D134020	VR-PCB	1/20W B 20KΩ-20TMCS PICTURE CONTROL
VR480	G00129D134010	VR-PCB	1/20W B 100KΩ-20TMCS TRACKING CONTROL
VR580	G00129D119040	VR-PCB	1/20W B 100KΩ-9.5N
VC8A0	G00202P109020	TRIMMER CAPACITOR	4.2pF-20pF
S680	G00431C068010	SLIDE SWITCH	COLOUR MODE
S801	G00432P100020	KEY BOARD SWITCH	POWER
S802	G00432P100020	KEY BOARD SWITCH	EJECT
S803	G00432P100020	KEY BOARD SWITCH	FF
S804	G00432P100020	KEY BOARD SWITCH	STOP
S805	G00432P100020	KEY BOARD SWITCH	PLAY
S806	G00432P100020	KEY BOARD SWITCH	REW
S8A2	G00432P100020	KEY BOARD SWITCH	PAUSE/STILL
S8A3	G00432P100020	KEY BOARD SWITCH	SLOW/FR ADV
S8A4	G00432P100020	KEY BOARD SWITCH	REC

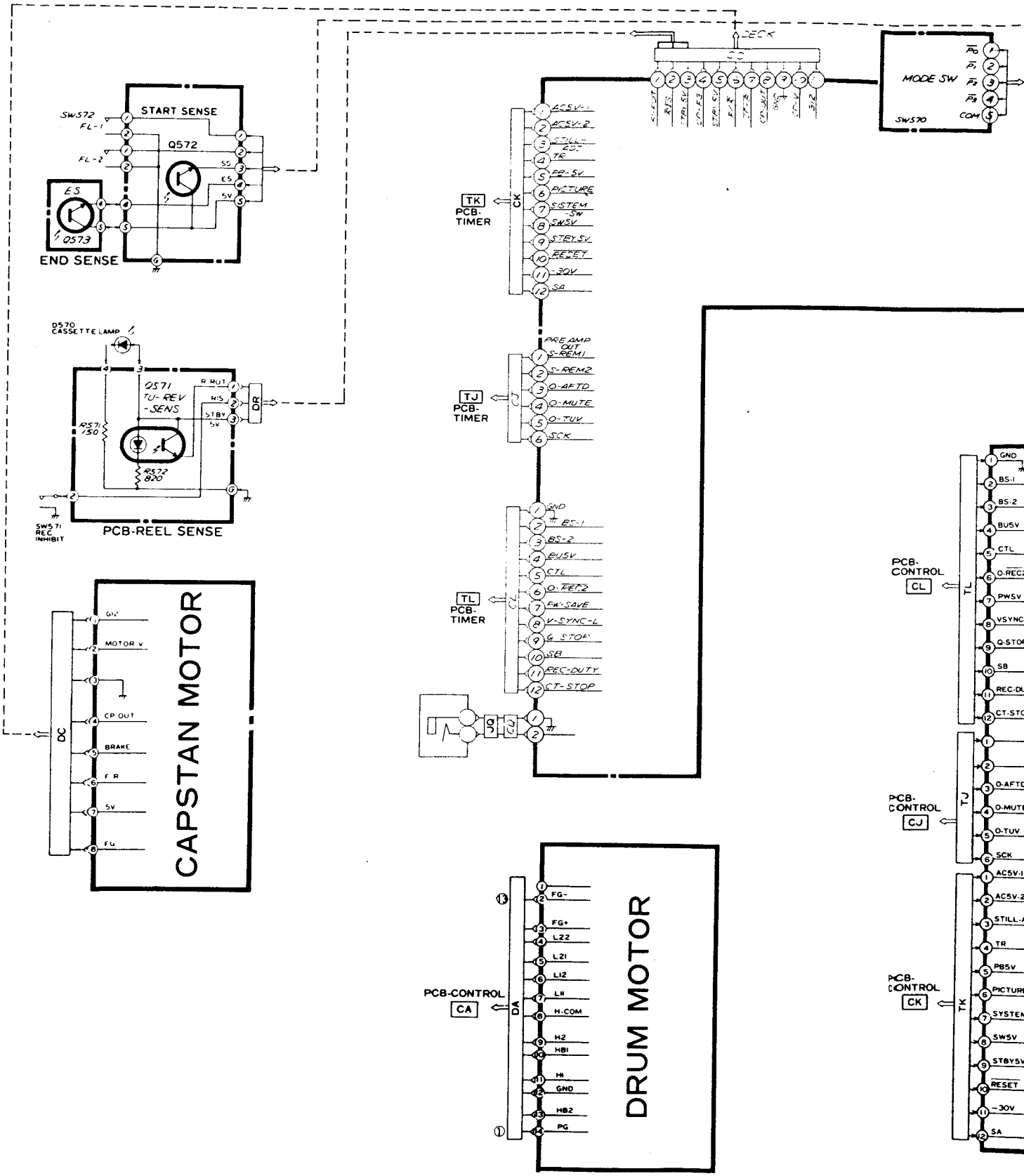
SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
S8A5	G00432P100020	KEY BOARD SWITCH	TAPE SPEED (SP/LP)
S8A6	G00432P100020	KEY BOARD SWITCH	PROG. REC ON/OFF
S8A7	G00432P100020	KEY BOARD SWITCH	OTR (STRAT TIME)
S8A8	G00432P100020	KEY BOARD SWITCH	OTR (REC TIME)
S8A9	G00432P100020	KEY BOARD SWITCH	TUNING ON/OFF
S8B0	G00432P100020	KEY BOARD SWITCH	PROG. ON/OFF
S8B1	G00432P100020	KEY BOARD SWITCH	CLOCK SET (ON/OFF)
S8B2	G00432P100020	KEY BOARD SWITCH	PROG. NBR
S8B3	G00432P100020	KEY BOARD SWITCH	TUNING UP
S8B4	G00432P100020	KEY BOARD SWITCH	CH UP
S8B5	G00432P100020	KEY BOARD SWITCH	AFT ON/OFF
S8B6	G00432P100020	KEY BOARD SWITCH	CHANNEL SKIP
S8B7	G00432P100020	KEY BOARD SWITCH	TUNING DWN
S8B8	G00432P100020	KEY BOARD SWITCH	CH DWN
S8B9	G00432P100020	KEY BOARD SWITCH	TIMER RESET
V8A0	G00253P059020	FLUORESCENT DISPLAY	13-BT-74Z
X8A0	G00285P063030	CRYSTAL RESONATOR	4.194304MHz
X8A1	G00285P054010	CRYSTAL RESONATOR	32.768KHz
Z8A0	G00939P164030	REMOCON PREAMP UNIT	GP1U503
	— POWER TRANS SECTION —		
T971	G00350P377020	POWER TRANSFORMER	220V
D971	G00264P500020	DIODE	EM01Z
D972	G00264P500020	DIODE	EM01Z
F971	G00283D046080	FUSE	T 630mA
F972	G00283D047010	FUSE	T 1A
F973	G00283D047030	FUSE	T 1.6A
	— DECK SECTION —		
IC1	G00266D057010	INTEGRATED CIRCUIT	HA13403 CAPSTAN MOTOR DRIVE
Q571	G00268P026010	PHOTO INTERRUPTER	GP2L04B REEL SENSOR
Q572	G00268P040020	PHOTO TRANSISTOR	PN1364 START SENSOR
Q573	G00268P040010	PHOTO TRANSISTOR	PN1363 END SENSOR
Q971	G00260P563050	TRANSISTOR	2SD1776-P, Q
D570	G00264P307020	DIODE-LE	GL-451
	— PRINTED CIRCUIT —		
	G00928B521050	MAIN PCB ASSY	
	G00928B522020	POWER SUB PCB ASSY	
	G00928B541010	TIMER PCB ASSY	
	G00928C306010	REEL SENSOR PCB ASSY	
	G00928C320080	IC PCB ASSY	
	G00928C330010	CONNECTOR PCB ASSY	
	G00928C337010	JACK PCB ASSY	
	— ASSY PARTS —		
	G00928B371070	UPPER DRUM ASSY	
	G00928C303010	FE HEAD ASSY	
	G00928C304020	LOADING MOTOR ASSY	
	G00928C305060	MODE SWITCH ASSY	
	G00928C354010	A/C HEAD ASSY	
	G00948B138040	DRUM ASSY	

4. PACKING PARTS



ITEM	PARTS NO.	PARTS NAME	DESCRIPTION
		PACKING PARTS	
1	G00803A087010	CUSHION-VTR	
2	G00831D190030	PACKING-SHEET	
3	————	ACCESSORY	
4	G00802B19201	PACKING-CASE	

ITEM	PARTS NO.	PARTS NAME	DESCRIPTION
		ACCESSORY	
10	G00242D231030	CABLE	1.5m
11	G00829C054070	SHEET-STRIP	
12	G00831D181020	PACKING-BAG	
13	G00871C811050	IB-VTR	
14	G00939P203040	TRANSMITTER-REMOCON	
15	————	BATTERY	


START SENSE
SW572
FL-1
FL-2
Q572
SS
ES
5V
ES
Q573
END SENSE
Q570
CASSETTE LAMP
Q571
TU-REV
-SENS
R OUT
NIS
STBY 5V
DR
R571
150
R572
820
SW571
REC
INHIBIT
PCB-REEL SENSE
CAPSTAN MOTOR
DC
GND
MOTOR V
CP OUT
BRAKE
F.R
5V
FG
DECK
MODE SW
SW570
TK
PCB-
TIMER
CK
ACSV-1
ACSV-2
STILL-
ADJ.
TR
PB-5V
PICTURE
SYSTEM
-SW
SWSV
STBY5V
RESET
-30V
SA
TJ
PCB-
TIMER
CJ
PREAMP
OUT
S-REM1
S-REM2
Q-AFTD
Q-MUTE
Q-TUV
SCK
TL
PCB-
TIMER
CL
GND
BS-1
BS-2
BU5V
CTL
PW5V
V-SYNC-L
SB
REC-DUTY
CT-STOP
PCB-
CONTROL
CL
PCB-
CONTROL
CJ
PCB-
CONTROL
CK
DRUM MOTOR
DA
PCB-CONTROL
CA
FG-
FG+
L22
L21
L12
LH
H-COM
H2
HB1
HH
GND
HB2
PG

PCB-BLOCK DIAGRAM

PCB-CONTROL

- MECHANISM CONTROL
- SERVO
- POWER

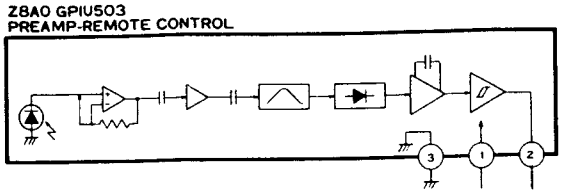
PCB-SIGNAL

- Y/C
- AUDIO

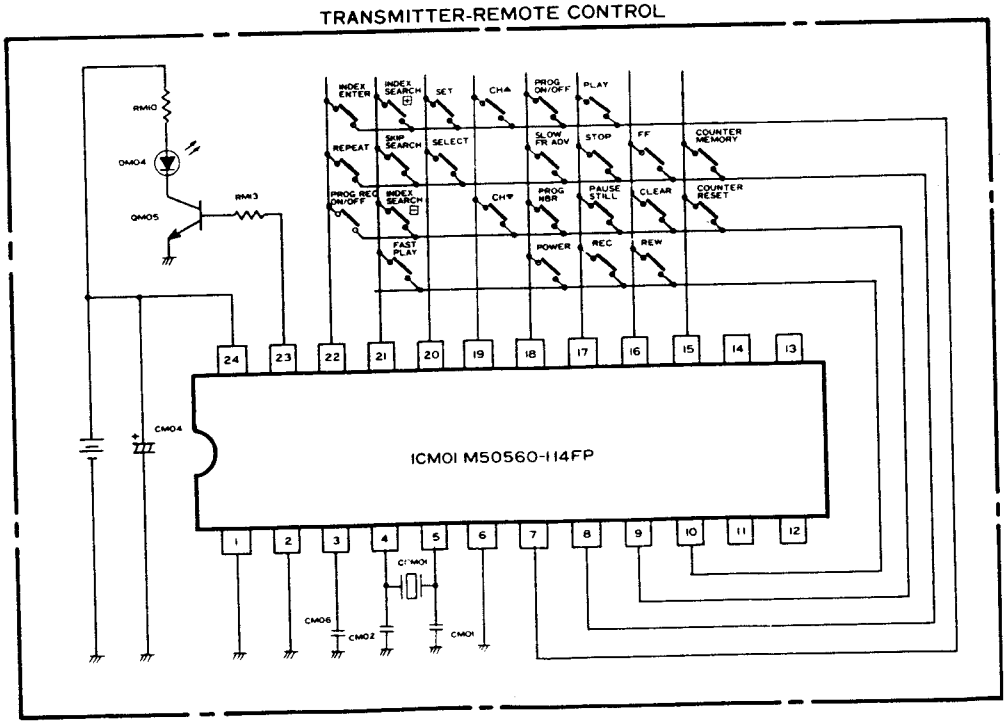
TUNER/VIF

PCB-TIMER

Z8A0 GPIU503
PREAMP-REMOTE CONTROL



TRANSMITTER-REMOTE CONTROL



SCHEMATIC DIAGRAM

NOTE 1:

1. DC voltages were measured from points indicated to the circuit ground with a valve voltmeter.
2. The voltages parenthesised are on SP recording mode.
   While those without parenthesised on SP play back mode.

NOTE 2:

1. The unit of resistance "ohm" entirely omitted.
   Accordingly, K = 1000 ohms
   M = 1000K ohms.
2. The wattage of resistor, not specifically designated, is 1/4 watt.
3. Resistors, not specifically designated, are carbon resistors.
4. The marks of resistors are as follows.
   CE : Cemented resistor
   MB : Metal oxide film resistor (type B)
   (S) : Fixed composition resistors
   (W) : Wire wound resistor
   (M) : Metal film resistor
5. The tolerance of resistor value, not specifically designated, is: ±5%, K = ±10% M = ±20%
6. The unit of capacitance, not specifically designated, is:
   a) μF , for numbers less than 1
   b) PF, for numbers more than 1
7. Capacitors, not specifically designated are Ceramic capacitors except electrolytic capacitors.
8. The marks of capacitors are as follows:
   ALM : Aluminus electrolytic capacitor
   MF : Polyester capacitor
   PP : Polypropylene film capacitor
   TAN : Tantalum capacitor
   SC : Semiconductor Ceramic Capacitors
   TF : Twin film capacitor
   NP : Non polarized electrolytic capacitor
   * : Electrolytic capacitor
9. The DC working voltage of capacitor, not specifically designated is: 50V
10. The tolerance of capacitor value, not specifically designated is: ±10%
    and J = ±5% K = ±10% M = ±20% P = $^{+100\%}_{-\ 0\%}$
    C = ±0.25PF D = ±0.5PF F = ±1PF Z = $^{+80\%}_{-20\%}$ N=±30%
11. Ceramic capacitors with the marks RH, UJ, SL, etc. are temperature compensating types.

SPECIFIC SYMBOL	
Zener Diode	Crystal unit
Varicap	LE Diode
Posistor	Photo Diode
Thermistor	Ceramic filter
Fusible Resistor	

This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

(Diode, not specifically designated, is IS2076/IN4148)

IC8A1 M58659P

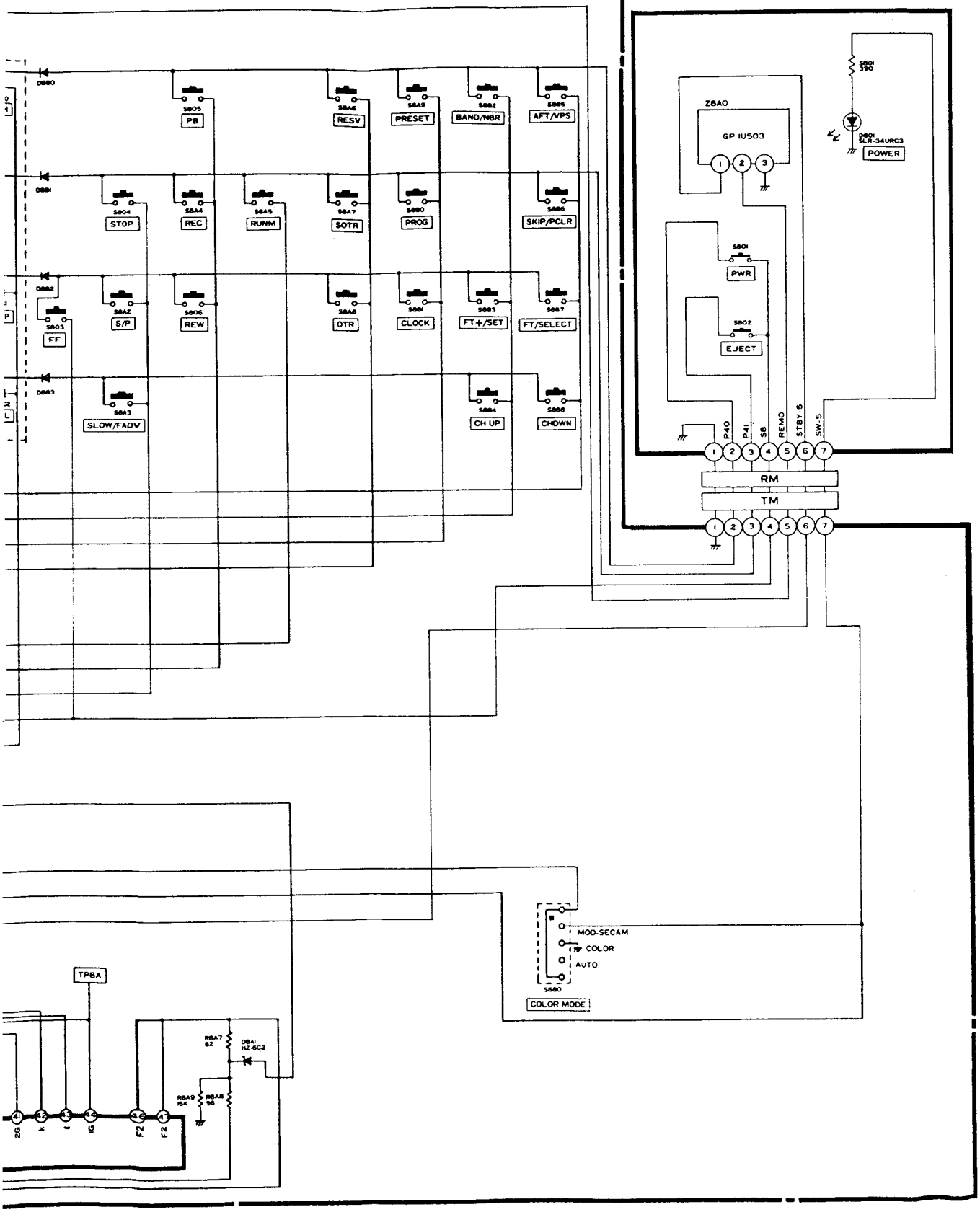
IC8A0
μPDT5208G-522-1B

V8A0 13-BT-74Z

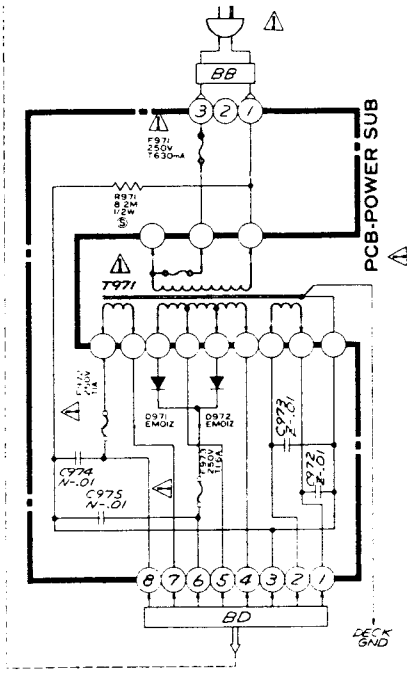
PCB-CONTROL CL
PCB-CONTROL CJ
PCB-CONTROL CK

⚠ PCB-TIMER

(Diode, not specifically designated, is IS2076/IN4148)



PCB-CONTROL



⚠

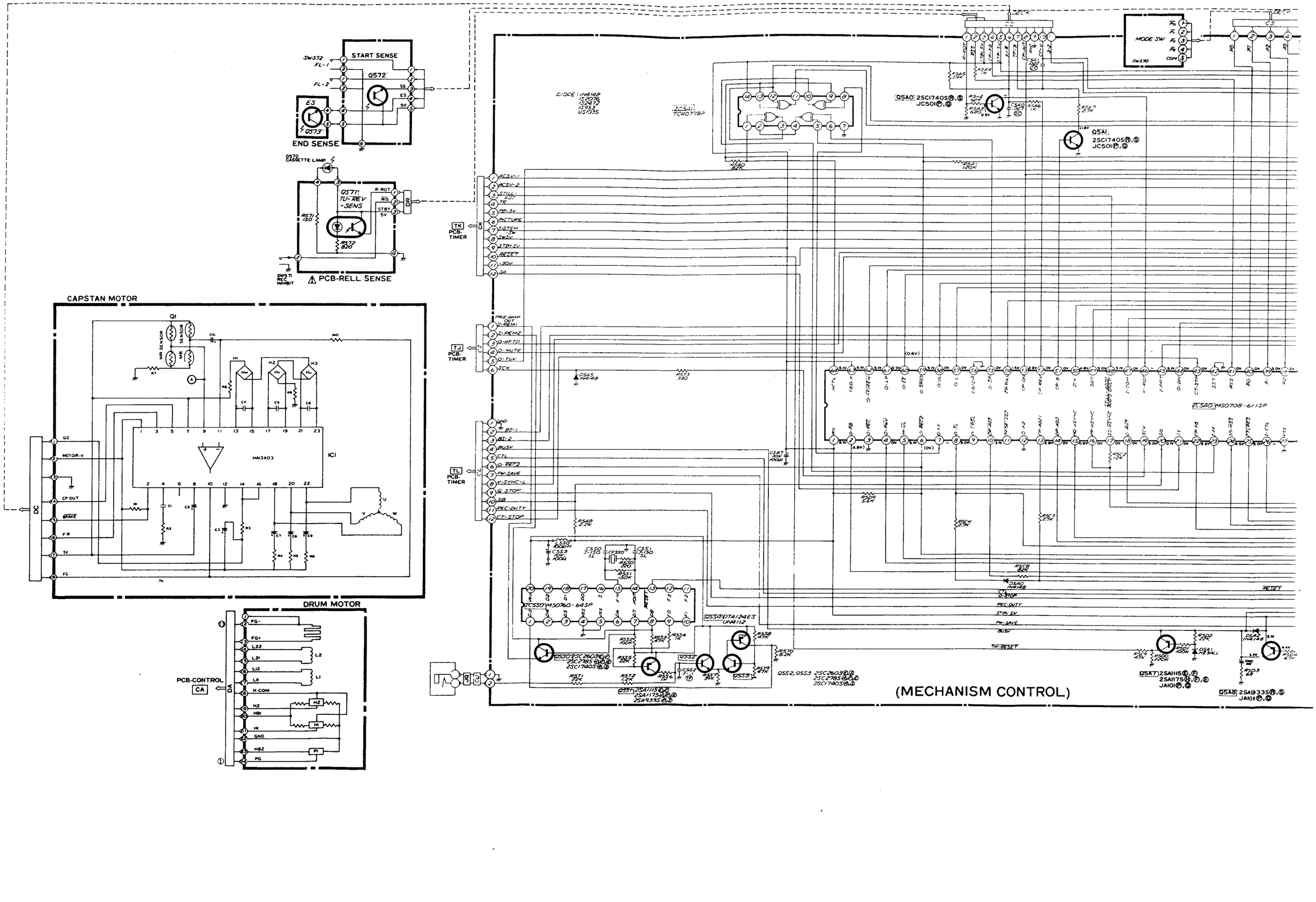
SERVICING PRECAUTION

SYMBOLS INDICATE COMPONENTS HAVING SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY AND PERFORMANCE. THEREFOR REPLACEMENT OF ANY SAFETY PARTS SHOULD BE IDENTICAL IN VALUE AND CHARACTERISTICS.

DON'T DEGRADE THE SAFETY OF THE RECEIVERS THROUGH IMPROPER SERVICING.

——————— Drum Servo System

Capstan Servo System


START SENSE
Q572
END SENSE
Q573
CASSETTE LAMP
Q571
TU-REV -SENS
PCB-RELL SENSE
CAPSTAN MOTOR
HA13403
IC1
DRUM MOTOR
PCB-CONTROL
(MECHANISM CONTROL)
MODE SW
TC5407778P
TC5307M50760-64SP
TC5407M50708-611SP

8 9 10 11 12 13 14 15 16

(POWER)

(SERVO)

PCB-CO

IC4A0① PLAY — 5.0Vp-p — (TIME/DIV 5m sec)

IC4A0② PLAY — 5.0Vp-p — (TIME/DIV 0.5m sec)

IC4A0③ PLAY — 5.0Vp-p (V) — (TIME/DIV 20$_H$ sec)

IC4A0④ PLAY — 5.0Vp-p (V)

IC4A0⑤ PLAY — 0.0Vp-p — (TIME/DIV 0.2m sec)

IC4A0⑥ PLAY — 0.6Vp-p (H)

IC4A0⑦ PLAY — 5.0Vp-p — (TIME/DIV 10$_H$ sec)

IC4A0⑧ PLAY — 5.0Vp-p — (TIME/DIV 10$_H$ sec)

IC4A0⑨ PLAY — 5.0Vp-p — (TIME/DIV 10$_H$ sec)

IC4A0⑩ PLAY — 5.0Vp-p — (TIME/DIV 20$_H$ sec)

IC4A0⑪ PLAY — 5.0Vp-p

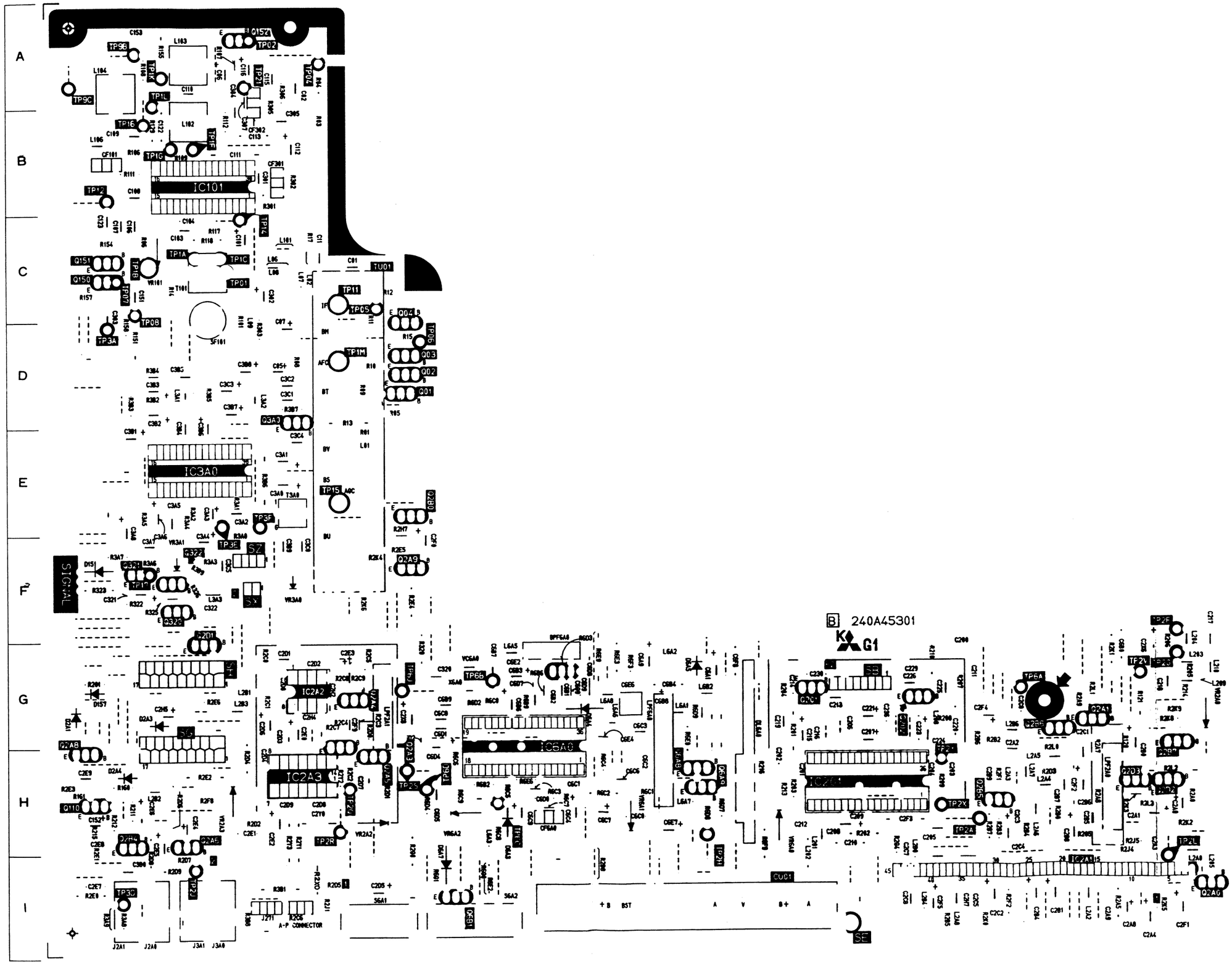
IC4A0⑫ PLAY — 0.6Vp-p (H)

SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS
IC101	B-2	Q6A8	H-5	CF6A0	H-4	TP21	A-2
IC201	H-7	Q6A9	H-6			TP2A	H-8
IC2A1	I-8	Q6B1	I-4			TP2F	F-9
IC2A2	G-3			DL6A0	G-6	TP2G	G-9
IC2A3	H-2					TP2H	H-6
IC3A0	E-2	D151	F-1			TP2J	I-2
IC6A0	H-4	D157	G-1	LPF2A0	H-9	TP2L	I-9
		D2A1	G-1	LPF2A1	G-3	TP2Q	H-3
		D2A3	G-1	LPF6A0	G-5	TP2R	H-3
Q01	D-3	D2A4	H-1			TP2S	H-3
Q02	D-3	D6A3	H-4			TP2V	G-9
Q03	D-3	D6A4	G-5	SF101	D-2	TP2X	H-7
Q04	D-3	D6A5	G-5			TP2Y	H-7
Q110	I-1	D6A7	I-4			TP3A	D-1
Q150	C-1			T101	C-2	TP3D	I-1
Q151	C-1			T3A0	E-2	TP3E	E-2
Q152	A-2	VR101	C-1			TP3F	E-2
Q201	G-6	VR2A0	G-9			TP6A	G-8
Q202	G-7	VR2A2	H-3	TP01	C-2	TP6B	G-4
Q2A0	I-9	VR2A3	H-2	TP02	A-2	TP6C	H-4
Q2A1	G-8	VR3A0	F-2	TP04	A-3	TP6D	H-3
Q2A3	H-3	VR3A1	F-2	TP05	C-3	TP6J	G-3
Q2A4	G-3	VR6A0	H-6	TP06	D-3	TP9B	A-1
Q2A5	H-3	VR6A1	H-5	TP07	C-1	TP9C	A-1
Q2A6	H-2	VR6A2	H-4	TP08	C-1		
Q2A8	H-1			TP11	C-3		
Q2A9	F-3			TP12	B-1		
Q2B0	E-3	VC6A0	G-4	TP14	C-1		
Q2B4	H-1			TP15	E-3		
Q2B5	H-8			TP16	B-1		
Q2B6	G-8	X6A0	G-4	TP17	F-1		
Q2B7	H-9			TP1A	C-2		
Q2D1	G-2			TP1B	C-1		
Q2D2	H-9	BPF6A0	G-4	TP1C	C-2		
Q2D3	H-9			TP1F	B-2		
Q320	F-2			TP1G	B-1		
Q321	F-1	CF101	B-1	TP1K	A-1		
Q322	F-2	CF301	B-2	TP1L	A-1		
Q3A0	D-2	CF302	A-2	TP1M	D-3		

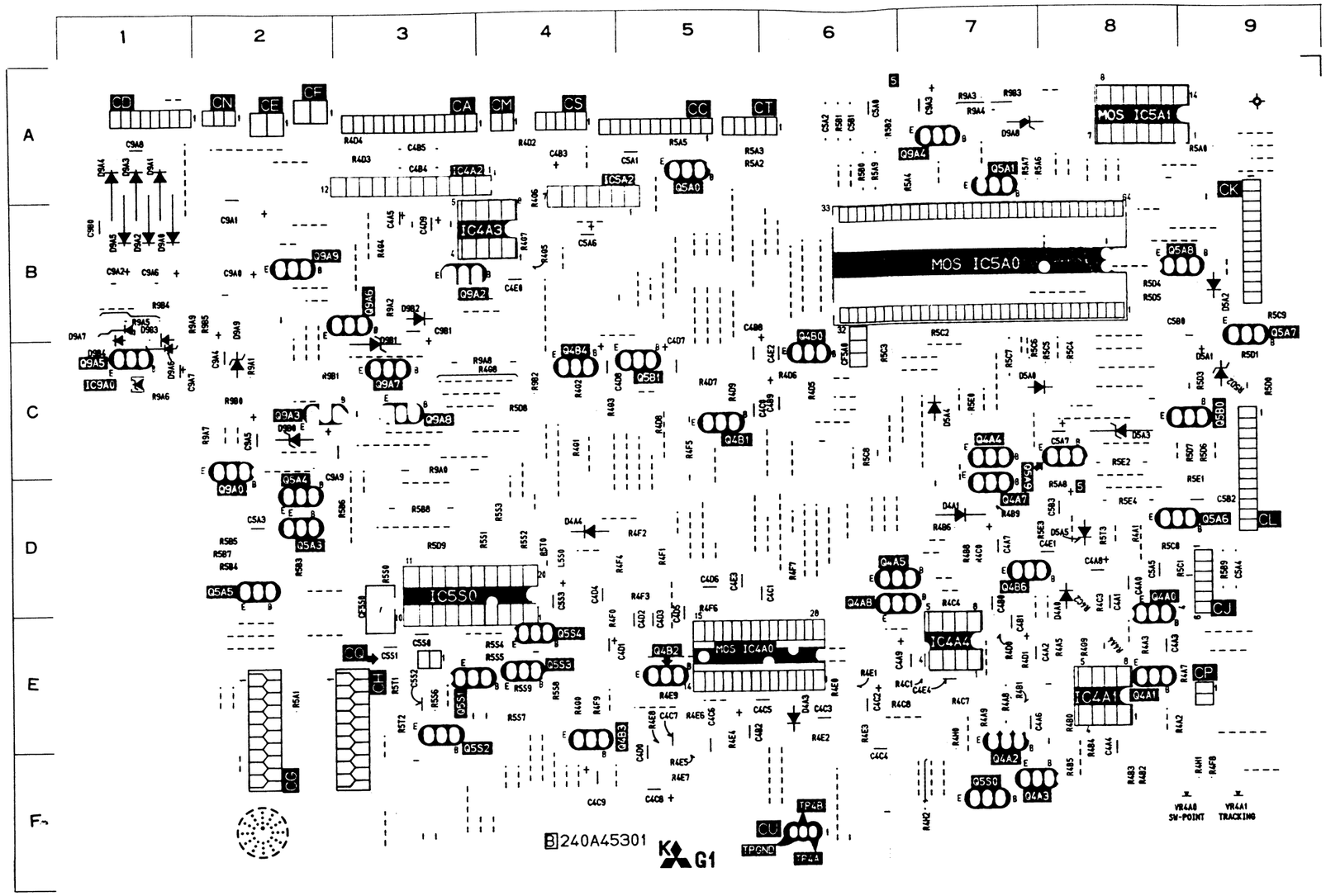
PCB-SIGNAL

1	2	3	4	5	6	7	8	9

A B C D E F G H I

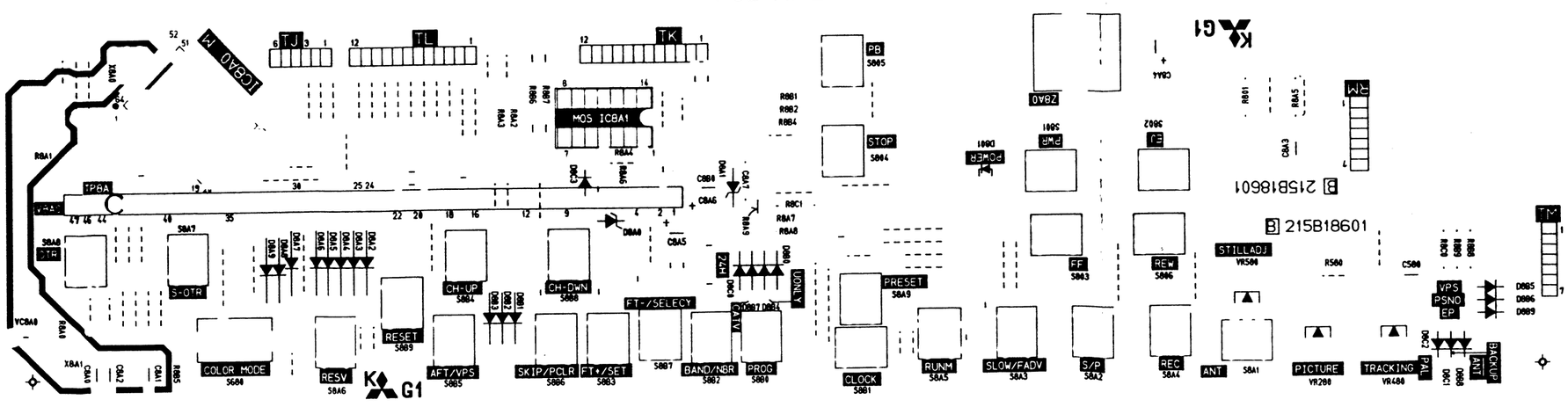


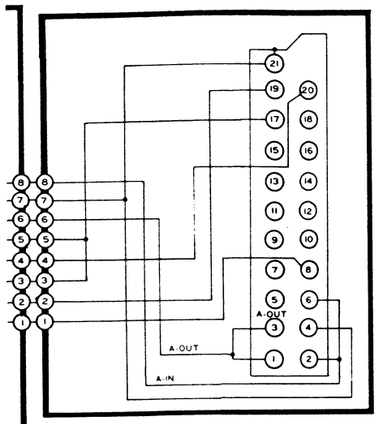
PCB-CONTROL



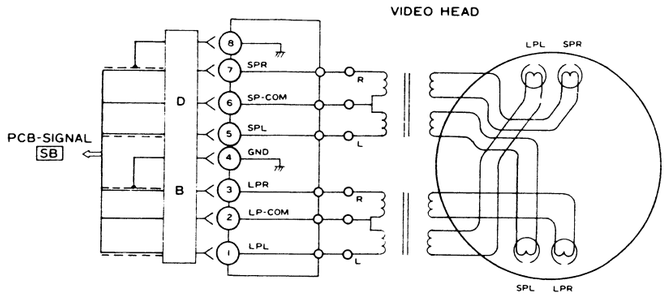
SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS
IC4A0	E-5	Q5S1	E-3	D9B4	C-1
IC4A1	E-8	Q5S2	E-3		
IC4A2	A-3	Q5S3	E-4		
IC4A3	B-4	Q5S4	E-4	VR4A0	F-9
IC4A4	E-7	Q9A0	C-2	VR4A1	F-9
IC5A0	B-7	Q9A2	B-3		
IC5A1	A-8	Q9A3	C-2		
IC5S0	D-3	Q9A4	A-7	CF5A0	C-6
IC5A2	A-4	Q9A5	C-1	CF5S0	D-3
IC9A0	C-1	Q9A6	B-3		
		Q9A7	C-3		
		Q9A8	C-3	TP4A	F-6
Q4A0	E-8	Q9A9	B-2	TP4B	F-6
Q4A1	E-8			TPGND	F-6
Q4A2	F-7				
Q4A3	F-7	D4A0	D-8		
Q4A4	C-7	D4A1	D-7		
Q4A5	D-6	D4A3	E-6		
Q4A7	D-7	D4A4	D-4		
Q4A8	D-6	D5A0	C-7		
Q4B0	C-6	D5A1	C-9		
Q4B1	C-5	D5A2	B-9		
Q4B2	E-5	D5A3	C-8		
Q4B3	E-4	D5A4	C-7		
Q4B4	C-4	D5A5	D-8		
Q4B6	D-7	D9A0	B-1		
Q5A0	A-5	D9A1	A-1		
Q5A1	A-7	D9A2	B-1		
Q5A2	A-6	D9A3	A-1		
Q5A3	D-2	D9A4	A-1		
Q5A4	D-2	D9A5	B-1		
Q5A5	D-2	D9A6	C-1		
Q5A6	D-8	D9A7	B-1		
Q5A7	C-9	D9A8	A-7		
Q5A8	B-9	D9A9	C-2		
Q5B0	C-9	D9B0	C-2		
Q5B1	C-5	D9B1	C-3		
Q5S0	F-7	D9B2	B-3		
		D9B3	C-1		

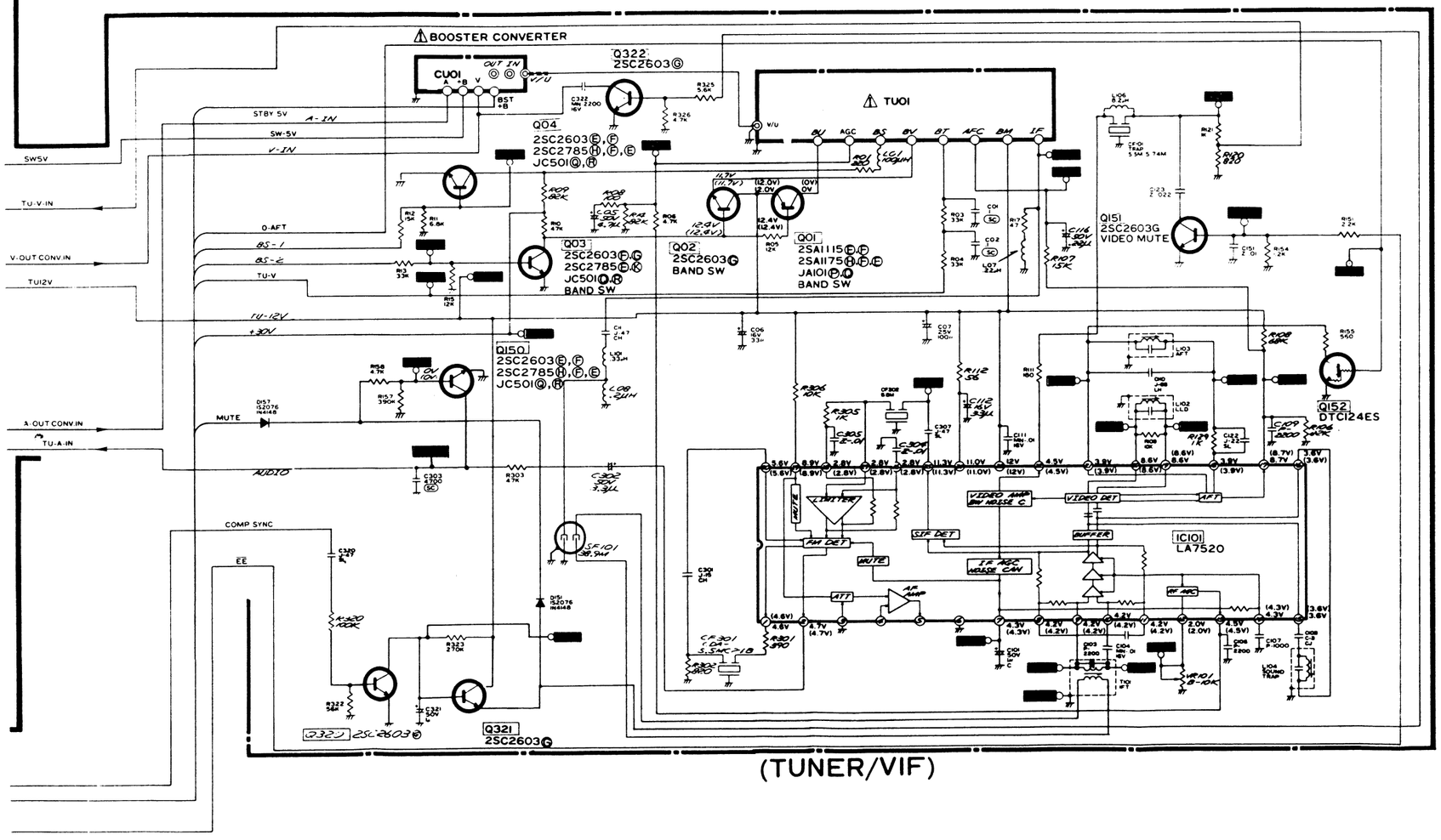
PCB-TIMER





VIDEO HEAD





SV8720 (3/3)

1 2 3 4 5 6 7 8 9

IC2AI ① PLAY
0.3Vp-p60

IC2AI ② PLAY
0.8Vp-p60

IC2AI ⑧ PLAY
0.2Vp-p41

TP2H PLAY
5.0Vp-p31

IC2AI M51475G-7
M51475G-7A

IC2AI ① REC
0.7Vp-p60

VR2A0 REC
0.5Vp-p60

TP6J PLAY
0.6Vp-p60

TP6A PLAY
0.6Vp-p60

IC6A0 ⑪ PLAY
0.2Vp-p60

IC6A0 ⑪ REC
0.2Vp-p (H)

IC6A0 ⑤ PLAY
0.05Vp-p60

IC6A0 ⑦ PLAY
0.6Vp-p60

IC6A0 ⑦ REC
0.6Vp-p60

VR6A0 REC
0.02Vp-p60

TP6C PLAY
1.0Vp-p (H)

Q2A0 2SC2724 ⑥,⑥

Q2D2 2SC2603 ⑥,⑥ 2SC2785 ⑥,⑥,⑥ JC501 ⑥,⑥

Q6B3 DTC124F

Q2D3 2SA1115 ⑥,⑥

Q2B6 2SC2724 ⑥,⑥

Q2B7

Q2B7 2SA1115 ⑥,⑥ JA101 ⑥,⑥

Q2A1 2SA1115 ⑥,⑥ 2SA1175 ⑥,⑥,⑥ JA101 ⑥,⑥

Q6A8 2SC2603 ⑥,⑥ 2SC2785 ⑥,⑥,⑥ JC501 ⑥,⑥

Q6B1 2SA1115 ⑥,⑥ JA101 ⑥,⑥

Q6A9 DTC124ES

IC6A0 M51477SP

Q2D1 DTA124F

Q2A5 2SA933S

Q2A9 2SA1115 ⑥,⑥ 2SA1175 ⑥,⑥ JA101 ⑥,⑥

Q2B4 2SC2603

IC2A2 MN3106

Q2B5 2SC2724 ⑥,⑥

Q2A3

Q2A3 2SA1115 ⑥,⑥/2SA

(Y/C)

SG

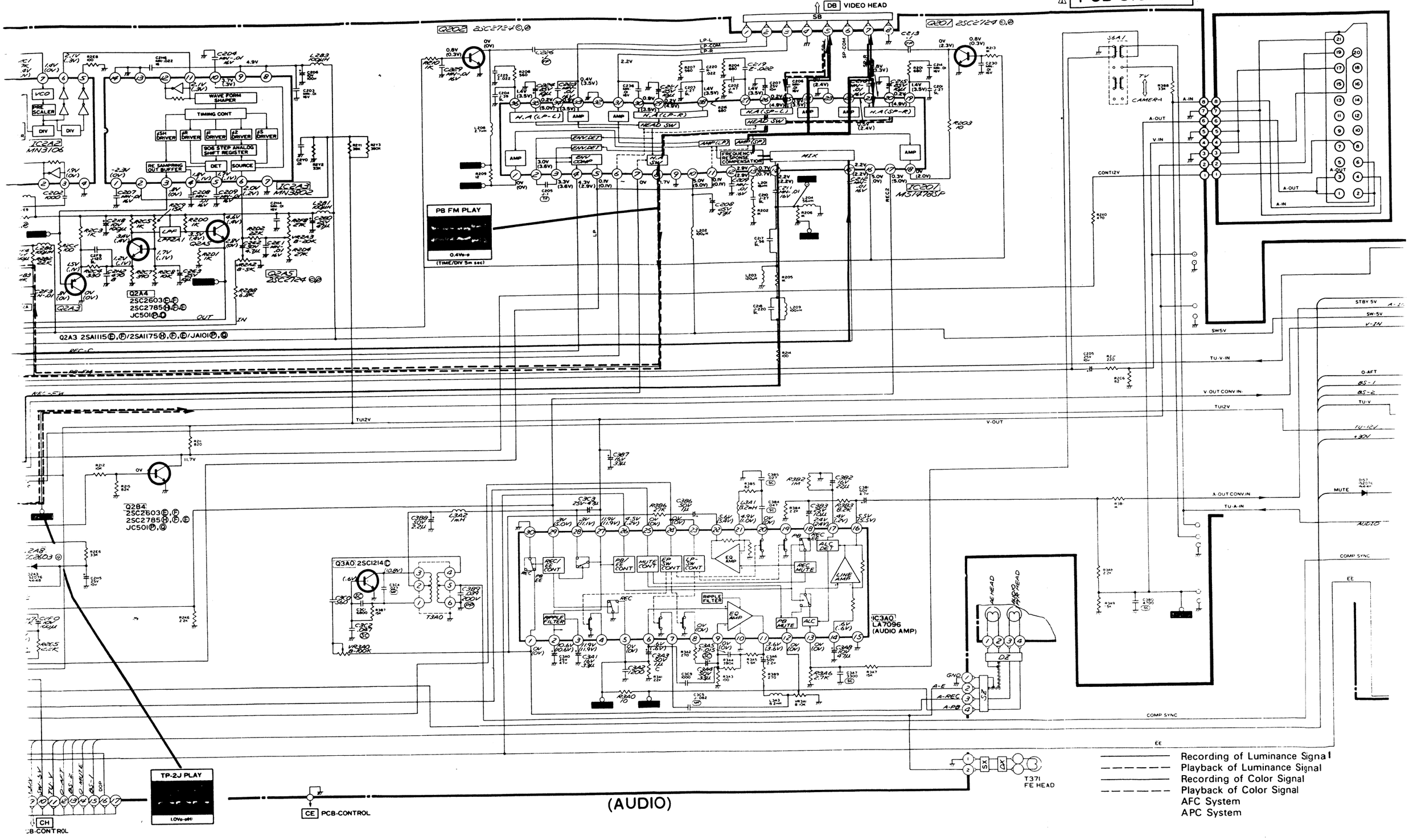
CG PCB-CONTROL

SH

CH PCB-CONTROL

9 10 11 12 13 14 15 16 17

⚠ PCB-SIGNAL



Recording of Luminance Signal
Playback of Luminance Signal
Recording of Color Signal
Playback of Color Signal
AFC System
APC System